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Journal d'un Voyage à la Rade
de la Perouse Paris au 8. R. F.
AN 624

ACCOUNT OF A VOYAGE

IN SEARCH OF

LA PÉROUSE,

UNDERTAKEN BY ORDER OF THE

CONSTITUENT ASSEMBLY OF FRANCE,

AND PERFORMED

In the Years 1791, 1792, and 1793,

IN THE

Recherche and Espérance, Ships of War,

UNDER THE COMMAND OF

Rear-Admiral BRUNI D'ENTRECASTEAUX.

TRANSLATED FROM THE FRENCH OF

M. LABILLARDIÈRE,

Correspondent of the *ci-devant* Academy of Sciences, Member of
the Society of Natural History of Paris, and one of the
Naturalists attached to the Expedition.

IN TWO VOLUMES.

Illustrated by Engravings,

AND A CHART EXHIBITING THE TRACK OF THE SHIPS.

VOL. I.

ATHENÆUM
AND NEW BOND STREET
LONDON

LONDON,

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1800.

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Little Queen Street, Holborn;



TO THE

RIGHT HONOURABLE

SIR JOSEPH BANKS, BART. K. B.

President of the Royal Society,

&c. &c. &c.

SIR,

WHEN I consider the obligation which you have conferred on the Author of the "Account of the Voyage in search of "La Pérouse," I cannot, as the Translator of his work, resist the inclination I feel, to pay you that tribute of applause to which you have so just a claim. The Sciences, to the improvement of which you have not only devoted your days, but, in the prime of

life, sacrificed your ease and comfort, have now to acknowledge your having been instrumental in affording M. LABILLARDIÈRE an opportunity of enriching natural history with a description of the specimens which he collected during his voyage with Admiral D'Entrecasteaux.

In these volumes you will, no doubt, Sir, find many objects which have before attracted your notice in the course of your circumnavigation of the globe; but among the plants here described, you will meet with several of new genera and species, or at least which appear not to have hitherto fallen under the observation of any naturalist. Of these I have endeavoured to convey, to the English botanical reader, an accurate idea: and it will be no small gratification to me to learn, that my humble attempts, in this respect, have not been unattended with success; and that, upon the whole, my translation has proved a faithful picture of the original, and not altogether undeserving of the approba-

DEDICATION.

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tion of one, who has so fully exemplified the truth of Dr. Hawkesworth's remark in his Introduction to Cook's First Voyage: "It is fortunate for mankind, when wealth and science, and a strong inclination to exert the powers of both for purposes of public benefit, unite in the same person."

I have the honour to be,

With great respect,

SIR,

Your most obedient, and

most humble servant,

THE TRANSLATOR.

LONDON,

May 2, 1800.

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THE

TRANSLATOR'S PREFACE.

THE Voyage in search of La Pérouse had long ceased to engage the attention of the curious, and even seemed almost to have escaped the memory of the general class of readers, when, after a lapse of seven years, one of the Naturalists embarked on the expedition, recently published an account of it, a correct and unmutilated translation of which will be found in the following sheets; but, as M. Labillardière, in his Introduction, has not assigned any reason for the tardy appearance of his work, it may perhaps be not altogether uninteresting to state briefly the principal causes which have occasioned this delay.

It will be seen towards the end of the Second Volume, that, after the death of Captain Huon and

and of Rear-admiral D'Entrecasteaux, the command of the expedition devolved on M. Dauribeau, who had been previously appointed Captain of the *Espérance*. While the ships lay off Sourabaya, one of the principal settlements of the Dutch in the Island of Java, an account was received there of war having broken out between France and Holland. Although the council of Sourabaya at first detained the French officer sent to procure pilots to carry the ships into the road, they soon received orders from the Regency of Batavia not only to admit the French ships, but to furnish them and their crews with every necessary of which they might stand in need. The dysentery having at this time made considerable ravages on board, most of the gentlemen belonging to the expedition took up their residence on shore. It appears, that, three months after this, some fresh news having arrived from Europe, M. Dauribeau and the principal officers came to a resolution of hoisting the white flag, as the emblem of their attachment to the old monarchical government of France, and putting themselves under the protection of the Dutch; they

they caused all the officers, naturalists, and such of the people belonging to the two ships as they thought would espouse the republican cause, to be apprehended and thrown into prison. M. Dauribeau at the same time seized upon all the collections of the naturalists, and soon after prevailed on the Governor of Samarang to cause their effects to be searched, in order to get possession of the manuscripts containing the observations which they had made during the voyage; but M. Labillardière and his friend M. Legrand saved their journals. The officers and other persons of the republican party were in the sequel transferred to the prisons of Batavia, and after a long confinement in the vicinity of that unhealthy spot, were exchanged, and sent to the Isle of France. The *Recherche* and the *Éspérance* being left without men sufficient to navigate them, an inventory was taken of their furniture, stores, &c. by commissioners appointed on both sides; and these, together with the ships, were received by the Regency of Batavia to answer the advances made in provisions, and in other kinds of succour afforded to the officers

and crews ; the Regency engaging that the Dutch government should account for the surplus to the King of France. M. Dauribeau died on the 22d of August 1794 ; and M. Rossel, then first lieutenant of the Recherche, consequently becoming the senior officer in command, took into his charge Admiral D'Entrecasteaux's journal, with all the charts, plans, drawings, specimens of natural history, &c. and early in the year 1795, embarked with them for Europe, in the Hoogly, a Dutch East-Indiaman, bound from Batavia to Amsterdam. On the 9th of June following, this and seven more Dutch ships that were in company with her, were captured off St. Helena by his Majesty's ship the Sceptre of 64 guns, commanded by Captain Essington, who was bringing home his prizes, when, in consequence of the Hoogly springing a leak, she was so near foundering, as to make it necessary to take out all her people and abandon her ; this service was executed on the 2d of September, when Captain Essington ordered her to be set on fire. On the Sceptre's arrival in England, Captain Essington transmitted to the Lords Commissioners of the

the Admiralty such of the journals, charts, plans, drawings, and collections in natural history belonging to Admiral D'Entrecasteaux's expedition, as, previous to the capture of the Hoogly, M. Rossel was conveying to Holland.

On the 12th of March 1796, M. Labillardière arrived at Paris from the Isle of France, and finding his collection of specimens of natural history in the possession of the British government, he urged the persons exercising the government of France to claim them; this application being warmly seconded by Sir Joseph Banks, they were delivered up with the most scrupulous exactness, and in a manner that reflects the highest honour on the persons immediately concerned, and, with all the other papers, charts, plans, &c. transmitted to Paris in August 1796 *.

A perusal of M. Labillardière's narrative will afford the most ample proof of his being eminently

* So exact were Ministers in their compliance with this application, that the Board of Admiralty ordered a Lieutenant of the navy to be sent to Havre in a flag of truce, with the twenty-one cases which contained M. Labillardière's collections, and which had previously been in the care of Sir Joseph Banks.

nently qualified for the situation to which he was appointed: his descriptions in natural history are at once concise and perspicuous, and bespeak the most perfect knowledge of the subject; while that part of his narrative which immediately relates to nautical matters, leaves the inquisitive geographer and cautious navigator nothing to wish for, either in respect to the configuration and extent of the coasts he visited, or their precise latitudes and longitudes, the variation of the compass, the prevailing winds, the direction and strength of the tides and currents, the situation of shoals, the soundings, &c. &c. On each of these heads enough is said for the guidance of future navigators, without descending to those frequent repetitions, which, however necessary they may be in detailing the geographical position of a newly-discovered land, never fail to tire the general reader. Hence it is, that the narrative of a mere seaman is commonly filled with a succession of nautical remarks, penned in the monotonous style of a log-book; the journal of the philosophic naturalist, on the contrary, not only abounds with lively pictures of the most

interesting productions of the creation, but is interspersed with descriptions of countries and people, manners, customs, and language ; nothing escapes his active researches ; none of the elements long conceal from his penetrating eye their diversified riches ; he explores the inmost recesses of Nature, and reveals those beauties which lie hidden from the view of an ordinary observer.

In the nomenclature of a few particular places, I have not thought myself at liberty to depart from my original. Thus, what Captain Cook and all English navigators term Van Diemen's Land, I have, after M. Labillardière, denominated Cape Diemen. But I have ventured to amend the orthography adopted by M. Labillardière in the course of other parts of his navigation, particularly in the names of the islands lying to the northward of New Guinea, and thence through Pitt's Strait to the Moluccas. I have transcribed the names of these different islands and places from the voyage of Captain Forrest, who had more frequent opportunities of learning the names given them by the natives.

I think it necessary to be thus explicit on this point, as I am of opinion that the names of all coasts, islands, bays, &c. given by the navigators who first discovered them should be faithfully preserved and adhered to, unless there is a possibility of obtaining the name assigned to them by the natives of the country, which should undoubtedly be preferred.

In regard to longitude, I have also followed the original, in which it is uniformly reckoned from the meridian of Paris, and after passing it to the east, is carried on easterly beyond the 180th degree, and back to the same meridian. The reader can easily reduce it to longitude from Greenwich, by allowing $2^{\circ} 20'$ for the difference established between the two meridians.

In order to save the trouble of reference, I have prefixed to this volume an INDEX of the articles of natural history, which occur in the work, containing their Linnæan or other scientific name, with the corresponding English or other name by which they are most commonly known, and likewise the pages of the volume in which they are mentioned.

In the Malay, Cape Diemen, Friendly Islands, New Caledonia, and Waygiou vocabularies, at the end of the second volume, I have adapted the orthography as nearly as possible to the English pronunciation.

The main object of M. D'Entrecasteaux's voyage having been to search for La Pérouse, I now subjoin, for the satisfaction of the reader, the translation of an extract of the last letter written by that unfortunate navigator to the Marshal *De Castries*, then Minister of the French Marine, in which he specifies the track that he intended to follow on his departure from New South Wales, in March 1788.

“ *Botany Bay, 7th February 1788.*

“ I shall again make a run to the Friendly Islands, and I shall strictly perform every thing that has been enjoined me by my instructions, in regard to the south part of New Caledonia, Mendana's Island of Santa Cruz, the southern coast of Surville's *Terre des Arfacades*, and the land called by Bougainville *La Louisiade*, and endeavour to

“ ascertain whether this last makes a part of
“ New Guinea, or is separated from it. To-
“ wards the end of July 1788, I shall pass be-
“ tween New Guinea and New Holland, by a
“ different channel than Endeavour Strait, pro-
“ vided such a one exist. During the month
“ of September, and a part of October, I shall
“ visit the Gulf of Carpentaria, and all the
“ west coast of New Holland, as far as Van
“ Diemen's Land ; but yet in such a manner,
“ that it may be possible for me to get to the
“ northward in time to arrive at the Isle of
“ France in the beginning of December 1788.”

To gratify the impatience of the reader, I shall here, in a few words, anticipate the result of this voyage. When Admiral D'Entrecasteaux touched at the Cape of Good Hope, he received dispatches from M. Saint-Felix, the French Commander in Chief on the India station, enclosing him the depositions of two French Captains of merchantmen, which stated that Captain Hunter, late of the *Syrius* frigate, when passing by the Admiralty Islands, in his voyage from

from Botany Bay to Batavia in a Dutch vessel, perceived several canoes containing savages, some of whom appeared to him to be clothed in the uniform of the French navy, but with whom, from the contrariety of the winds and currents, he could not have any intercourse. Notwithstanding the improbability of the truth of this statement, Admiral D'Entrecasteaux, with a zeal highly honourable to his feelings, did not hesitate a single moment; he changed the plan of his route, to hasten to the Admiralty Islands. His ardour not having been crowned with success, he recommenced his search in the order prescribed by his instructions, and completely fulfilled them all, by exploring, as far as was in his power, those coasts, islands, &c. mentioned by La Pérouse in his last letter, without being able to obtain the smallest information, or any thing like a ground for a probable conjecture, concerning the fate of a man, whose skill, perseverance, fortitude, and humanity, have justly entitled him to be placed at the head of those navigators of whom France may well cherish a proud and grateful remembrance.

INTRODUCTION.

THREE years having elapsed, and no tidings been received of the two ships the *Bouffle* and the *Astrolabe*, under the command of LA Pérouse, the Society of Natural History of Paris, towards the beginning of the year 1791, awakened the attention of the Constituent Assembly respecting the fate of that navigator and his companions in misfortune.

The hope of finding at least some wreck of an expedition undertaken for the advancement of the sciences, determined the Assembly to send two other ships in the track that these navigators were to have followed after their departure from Botany Bay. Some of them might possibly have escaped shipwreck, and be sequestered in a desert island, or thrown on coasts inhabited by savage nations;

nations ; perhaps they were yet living in those distant climates, and continually casting their looks towards the sea, in hopes that their country would one day send them the assistance which they had a right to expect.

The following is the decree that was passed on this subject, on the 9th of February 1791 :

“ The National Assembly, having heard the
“ report of its United Committees of Agricul-
“ ture, of Commerce, and of the Marine, de-
“ crees,

“ That the King be requested to give orders
“ to all ambassadors, residents, consuls, and
“ agents of the French nation, at the courts of
“ the different powers, that they do, in the
“ name of humanity, and of the arts and
“ sciences, engage the respective sovereigns at
“ whose courts they reside, to charge all navi-
“ gators and agents whatsoever, who are subject
“ to their control, in whatever part of the globe
“ they may be, but especially in the southern
“ parts of the South Sea, to make every inquiry
“ in their power after the two French frigates
“ the *Bouffole* and the *Astrolabe*, under the com-
“ mand

“ mand of M. de la Pérouse, as well as after
“ their crews, and endeavour to obtain every
“ information that may ascertain their existence
“ or their shipwreck; to the end, that, in case
“ M. de la Pérouse and his companions should
“ be found or heard of, no matter in what place,
“ all possible assistance may be rendered them,
“ and means procured them for returning to
“ their country, as well as for enabling them to
“ bring away every thing that may be in their
“ possession; the National Assembly engaging
“ to indemnify, and even to reward, according
“ to the importance of the service, whoever
“ shall afford assistance to these navigators, ob-
“ tain any information concerning them, or only
“ procure for France the restitution of whatever
“ papers and effects may belong or have be-
“ longed to the expedition in which they were
“ engaged.

“ That the King be requested to direct that
“ there be equipped one or more ships, on
“ board of which may be embarked some men
“ of science, naturalists, and draughtsmen; and
“ that the commanders employed on the expe-
“ dition

“ dition be charged with the double mission of
“ searching after M. de la Pérouse, agreeably to
“ the documents, instructions, and orders that
“ may be given them, and, at the same time, of
“ making inquiries relative to the sciences and
“ to commerce, taking every measure, independ-
“ ently of the search after M. de la Pérouse, or
“ even after having met with him or procured
“ intelligence of him, to render this expedition
“ useful to navigation, to commerce, and to the
“ arts and sciences.”

Compared with the original, by us the
President and Secretaries of the Na-
tional Assembly. At Paris, this 24th
of February 1791.

(Signed) DUPORT, President.

LIORE', }
Boussion, } Secretaries.

From my earliest youth I had applied myself
to the study of natural history: convinced that it
is in the great book of Nature that her produc-
tions should be studied, and a just idea formed
of

of her phenomena, no sooner had I finished my medical education, than I made a journey to England. This journey was soon followed by another to the Alps, where the soil affords a prodigious variety of specimens, owing to the difference of the temperature of those lofty mountains.

I afterwards visited part of Asia Minor, where I resided two years, in order to discover there the plants, of which the Greek and Arabic physicians have left us very imperfect descriptions: of these I had the satisfaction of bringing home some very fine collections.

I had not been long returned from these last travels, when the National Assembly gave orders for the equipment of two ships, for the purpose of endeavouring to save at least a part of the wreck of the expedition commanded by La Pérouse.

It was an honour to be of the number of those who were to make every possible search in order to restore to their country men to whom she owed so much.

In other respects this voyage held out many temptations

temptations to a naturalist. New countries were to enrich our knowledge with new productions, which could not fail to contribute to the advancement of the arts and sciences.

My fondness for travelling had till now been continually increasing, and three months sailing in the Mediterranean when I went to Asia Minor, had served me as a trial for a long voyage. Accordingly I eagerly embraced this opportunity of going to visit the South Seas.

If the gratification of this passion for study is dearly purchased, the variegated productions of a new country amply counterbalance all the hardships inseparable from long voyages.

I was chosen by the government to embark, as a naturalist, on the voyage of which I am now going to give an account.

My journal, which was kept with care during the voyage, contained a great many nautical observations; yet it is incumbent on me to declare, that this part would have been very incomplete, but for the regular days works furnished me by Citizen Legrand, one of the best officers belonging to the expedition.

I seize this opportunity to express my gratitude to that skilful seaman, whose loss we have to deplore in the present war.

When I quitted Batavia to repair to the Isle of France, Citizen Piron, draughtsman of the expedition, begged me to accept duplicates of the drawings of the dresses and of the views which he had taken in the course of the voyage. I will venture to say, that these drawings are a striking representation of the originals.

I have endeavoured to relate, in the most exact manner, the facts of which I was an eye-witness during this fatiguing voyage, through seas strewn with shoals, and in the midst of savages, against whom it was necessary for us to be constantly on our guard.

Admiral D'Entrecasteaux was appointed to the command of the expedition. This officer applied to government for two store-ships of about five hundred tons burden; they were sheathed with wood, and their bottom was then filled with nails. The Admiral was indifferent at their losing in point of speed, in hopes of giving an additional degree of solidity to their

construction; it is however admitted, that vessels sheathed with copper and copper-fastened, may be built fully as strong, and that they have, besides, the advantage in sailing. These two ships received names analogous to the object of the undertaking. That in which Admiral D'Entrecasteaux embarked was called *La Recherche*, and the other, commanded by Captain Huon Kermadec, was named *L'Espérance*.

The Recherche had on board one hundred and thirteen men at the time of her departure; the Espérance had only one hundred and six: the following are their names.

ON BOARD OF THE RECHERCHE.

<i>Commissioned Officers.</i>	
Bruni D'Entrecasteaux, Commander of the Expedition.	Renard, <i>Surgeon.</i>
Dauribeau, <i>Lieutenant.</i>	Hiacinthe Boideliot, <i>Surgeon's Mate.</i>
Rossel, <i>ditto.</i>	
Crétin, <i>ditto.</i>	Bertrand, <i>Astronomer.</i>
Saint-Aignan, <i>ditto.</i>	Labillardière, <i>Naturalist.</i>
Singler Dewelle, <i>Sous-lieutenant.</i>	Deschamps, <i>ditto.</i>
Willaumez the elder, <i>Enseigne.</i>	Louis Ventenat, <i>Naturalist doing the duty of Chaplain.</i>
Longuerue, <i>Midshipman.</i>	Beauteins Beaupré, <i>Geographical Engineer.</i>
Achard Bonvouloir, <i>ditto.</i>	Piron, <i>Draughtsman.</i>
Dumérite, <i>Volunteer.</i>	Lahaie, <i>Gardener.</i>
	<i>Warrant</i>

Warrant Officers.

Goulvain, *Boatswain.*
 Joseph Gourbel, *Boatswain's first Mate.*
 Olivier Chaouen, *Boatswain's Mate.*
 Thomas le Gal, *ditto.*
 Michel Calvez, *Quarter-master.*
 François Chevanton, *ditto.*
 Jean Marie Tanguy, *ditto.*
 François Gourneuf, *ditto.*

Gunners and Marines.

Jacques Devers, *Gunner.*
 Nicolas Bosten, *Gunner's Mate.*
 Jean-Baptiste Ferbus, *Master at Arms.*
 Jean-Baptiste Croisé, *Serjeant.*
 Laurent Jacot, *Corporal.*
 Michel Ferry, *ditto.*
 Benoit Dupont, *Marine.*
 Silvestre Bourdenet, *ditto.*
 Laurent Hichon, *ditto.*
 Jean-Louis Ferron, *ditto.*
 Louis Deschamps, *ditto.*
 Jean-Baptiste Guy, *ditto.*
 Simon Bonnot, *ditto.*
 Antoine Tournois, *ditto.*
 Edme-Côme Dauvissat, *ditto.*
 Pierre-Augustin Avignon, *ditto.*
 Denys Leduc, *ditto.*
 Louis-Marie Ingouf, *ditto.*

Carpenters.

Louis Gargan, *Carpenter.*
 Antoine Chaffener, *Carpenter's Mate.*
 Olivier Troadec, *ditto, crew.*

Caulkers.

Allain Livmec, *Caulker.*
 Jean Ropars, *Assistant.*

Sailmakers.

François Saliot, *Sailmaker.*
 Jean Joseph Lastenec, *Sailmaker's Mate.*

Pilots.

Joseph Raoul, *First Pilot.*
 Pierre-Guillaume Gicquel, *Second Pilot, made Enseigne the 6th February 1793.*
 Ange Raoul, *Assistant Pilot.*

Armourer.

Jean François Hardy.

Smith.

Jean-Marie Marhadour.

Sailors.

Jean Morvan.
 Pierre Legagneur.
 Jean Louis.
 Joseph Seguin.
 François Feuregard.

Louis Leblanc.
 Thomas-Joseph Perrès.
 Mathurin Leon.
 Sanson Philipe.
 Pierre-Louis Nicole.
 Jean-Jacques Moulin.
 Louis-Barthelemy Daulioules.
 Antoine-Pierre Lebugle.
 François Lebert.
 Jean-Marie Lebeven.
 Corentin Jezéquel.
 Guillaume Lecail.
 François Grezel.
 François Huon.
 Antoine Kleveau.
 Pierre-Antoine Lelard.
 Joseph Willemin.
 Joseph-Marie Gallo.
 François-Louis Lahot.
 Jacques Nouvel.
 Pierre Pichot.
 Jean-Marie Guiquion.
 Joseph-Marie Troemé.
 Thomas Roujeux.
 Jean Legal.
 Yves Legallou.
 Mathurin-Pierre Dupont.
 Vincent Henry.
 René-Joseph Maurice.
 Jacques-François Dubos.
 Pierre-Gaspar Saint-André.

Novices.

Fabien Crepin.
 François-Germain Marie For-
 restier.
 Vincent-Rolan Marjeat.

Boys.

Gabriel Abalen.
 Guillaume Usson.
 Jacques-Henri Lambert.
 Charles-François-Hypolite
 Deslacs.

*Purser, and People in his De-
 partment.*

Louis Girardin, *Purser.*
 Jean Leroy, *Cooper.*
 François Lebrun, *Ship's Cook.*
 Jean Hervé, *Butcher.*
 Pierre-François Rippert,
Baker.

Servants.

— Villeneuve.
 — Bénard.
 Pierre Broussié.
 Joseph Jourdain.
 Joseph Jure.
 — Redée.
 Louis Ferran.
 Jean Martineau.

The British navy not affording any rank corresponding to that
 of *Sous-lieutenant*, or of *Enseigne*, those titles are necessarily
 preserved. T.

ON BOARD OF THE ESPÉRANCE.

<i>Commissioned Officers.</i>	<i>Gunners and Marines.</i>
Huon Kermadec, <i>Captain.</i>	Guyard, <i>Gunner.</i>
Trobiant, <i>Lieutenant.</i>	Aubin, <i>Gunner's Mate.</i>
Lasseny, <i>ditto.</i>	Sullerot, <i>Assistant.</i>
Lagrandière, <i>ditto.</i>	Zeler, <i>Serjeant.</i>
Lusançay, <i>ditto.</i>	Coulaux, <i>ditto.</i>
Lamotte Duportail, <i>Sous-lieutenant.</i>	Guilloux, <i>Corporal.</i>
Legrand, <i>Enseigne.</i>	Valentin, <i>ditto.</i>
Laignel, <i>ditto.</i>	Antoine, <i>Marine.</i>
Jurien, <i>Volunteer.</i>	Couillez, <i>ditto.</i>
Boyne, <i>Midshipman.</i>	Schmit, <i>ditto.</i>
Jouannet, <i>Surgeon.</i>	Guy, <i>ditto.</i>
Gauffre, <i>Surgeon's Mate.</i>	Fort, <i>ditto.</i>
<hr/>	
Pierson, <i>Astronomer, doing the duty of Chaplain.</i>	<i>Carpenters.</i>
Riche, <i>Naturalist.</i>	Jouanot, <i>Carpenter.</i>
Blavier, <i>ditto.</i>	Ralond, <i>Carpenter's Mate.</i>
Jouvency, <i>Geographical Engineer.</i>	<i>Caulkers.</i>
Ely, <i>Draughtsman.</i>	Bizien, <i>Caulker.</i>
<hr/>	
<i>Warrant Officers.</i>	<i>Sailmakers.</i>
Tonnère, <i>Boatswain.</i>	Stephany, <i>Sailmaker.</i>
Manach, <i>Boatswain's first Mate.</i>	Leguel, <i>Sailmaker's Mate.</i>
Dubois, <i>Boatswain's Mate.</i>	<i>Pilots.</i>
Guivarch, <i>ditto.</i>	Rault, <i>First Pilot.</i>
Pelonet, <i>Quarter-master.</i>	Lucas, <i>Second Pilot.</i>
Désert, <i>ditto.</i>	Lédanleur, <i>Assistant Pilot.</i>
Bethany, <i>ditto.</i>	Heurtaut, <i>Coasting Pilot.</i>
Pond, <i>ditto.</i>	<i>Armourers.</i>

Armourers.

Martin Henry.

Filtz.

Smith.

Grégoire Annet.

Sailors.

Guérin.

Lacroix.

Caron.

J. Legoff.

Riou.

Hubert.

Kos.

Cadiou.

Kanguiader.

Lepen.

Blaise.

Lefebre.

Diveres.

Lapanouse.

Savin.

Villemer.

Forget.

Bellec.

Merdy.

Mahot.

Briant.

Laverge.

Defienne.

Kouas.

Bourée.

S. Legoff.

Dubosc.

Ladroux.

Bescon.

Niseaux.

Leprat.

Gigoudeaux.

Lecorps.

Jacob.

Souffes.

Toullec.

Boys.

Guymar.

Alexandre André.

Pihan.

J. Legoff.

François André.

Purser, and People in his Department.

Fleurian, Purser.

Coutray, Cooper.

Leroy, Ship's Cook.

Adam.

Peigné, Baker.

Servants.

Sirit.

Probassy.

Josse.

Creno.

Duvillers.

Haim.

Serpoy.

Legal.

It is painful to add, that out of two hundred and nineteen persons, there had already died eighty-nine, previous to my arrival at the Isle of France; but it must be observed, that we had lost very few people in the course of the voyage, and that this frightful mortality was owing solely to our long stay in the Island of Java.

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327	11 and 14	For <i>Jussiaea</i> read <i>Jussiaea</i> .
320	2	For <i>pana fruticosum</i> read <i>panax fruticosus</i> .
355	22	For <i>odoratissima</i> read <i>odoratissimus</i> .
375	3	For <i>Amboynans</i> read <i>Amboynans</i> .
397	5	For <i>tinea</i> read <i>blatta</i> .
407	7	For <i>tinea</i> read <i>blatta</i> .
432	4	For <i>aptenodyta</i> read <i>aptenodytes</i> .
464	4	For then read now.

AN ACCOUNT
OF A
VOYAGE
IN SEARCH OF
LA PÉROUSE.

CHAPTER I.

Departure from Brest.—Arrival at Santa Cruz, in the island of Teneriffe.—Journey to the Peak.—A sailor who was just drowned is restored to life.—Some daring thieves steal his clothes.—Two naturalists seized with a spitting of blood, which prevents them from ascending to the summit of the Peak.—English ships in the road of Santa Cruz.—Different results of observations made for ascertaining the variation of the magnetic needle.—A new volcano to the south-west of the Peak.

THE equipment of the two ships destined for the voyage which we were going to undertake, was in a very forward state towards the end of

the month of August 1791, when Commodore D'Entrecasteaux gave us notice to repair to Brest. I had the pleasure of performing this journey with three persons belonging to the same expedition, Citizens Riche, Beaupré, and Pierson.

We arrived at Brest on the 10th of September. The finest ships of France, such as the Majestueux, the Etats de Bourgogne, the Amérique, &c. were then in the harbour.

While the astronomers were occupied by observations for ascertaining the rate of going of the watches and time-keepers, the naturalists hastened to complete the articles necessary for the preservation of the collections which they purposed making in the new countries that they were going to visit.

As it was my intention to devote myself particularly to the observation of vegetables, I had occasion for a quantity of paper, and I wished to meet with some of a very large size. I had considerable difficulty in procuring twenty-two reams, because almost all that remained in store had recently been issued for the service of the artillery.

Part of the time that I had at my disposal was employed in visiting the botanical garden, which is kept in high order. In the same place there is a small cabinet of natural history, in which

which I remarked several anatomical preparations that had been presented by Citizen Jouanet, surgeon of the *Espérance*.

The ships companies were mustered in the harbour on the 21st of September.

On the 25th, our ships went into the road, where there were then not any foreign vessels, nor many French.

We were deeply laden. Indeed our draught of water was, at the time of our departure, four meters forty-six centimeters and a half, or thirteen feet nine inches, abeam, and four meters seventeen centimeters, or twelve feet six inches, forward *.

There were on board the *Recherche*:

- 6 Eight pounders.
- 2 Thirty-six pound carronades.
- 6 Swivels of a demi-kilogram.
- 12 Swivels of a double hectogram.
- 45 Muskets.
- 35 Pistols.
- 50 Sabres.
- 30 Pole-axes.
- 10 Musketoons.

* On due consideration, the translator has thought proper to retain the new French weights and measures, a table of which will be found at the end of the second volume. The only exception that he has made to this rule is respecting the depth of water, which is expressed in fathoms.

VOYAGE IN SEARCH

The Espérance had nearly the same means of defence; and these were sufficient for protecting us against any enterprise on the part of the savages.

The two ships were provided with a great quantity of articles destined to be distributed among the natives of the South Sea. Iron tools, stuffs of different colours, and particularly of red, formed the chief of our stock of articles for traffic.

Each of our ships carried eighteen months provisions. We were ready to sail, and were waiting only for a fair wind, when a tolerably fresh breeze from the eastward permitted us to get under way; about one o'clock in the afternoon, on the 28th of September. No sooner had we got clear of the road, than it was discovered that two sailors and a boy, who were extremely desirous of making this voyage, and much vexed at not being included in the number of the ships companies, had concealed themselves on board. As we had scarcely the room necessary for those who were destined for the voyage, the Commodore stood into the road of Bertheaume, whence he ordered these three unexpected intruders to be put on shore.

The Espérance, having confinued her course, had got far ahead of us; but we joined her again

again before night, for we sailed much better than she did.

We took our departure at six o'clock in the evening, being then in the latitude of $48^{\circ} 13'$ north, and in the longitude of $7^{\circ} 15'$ west; Ushant bearing north 2° west; the Bec de la Chèvre south-east 4° east; and the Bec du Raz south 2° east. We were then at the distance of a myriameter from Point Matthieu. The course ordered to be steered was west-north-west: afterwards, about midnight, the ship was kept west.

On the 29th, Commodore D'Entrecasteaux learnt, by dispatches, which he was not to open till he was at sea, that Captain Huon Kermadec, commander of the *Espérance*, was made Post, and that he himself was raised to the rank of rear-admiral. This news was instantly communicated through the speaking-trumpet to the *Espérance*.

Our ensigns were immediately hoisted with the distinctive emblem of the rank which had just been conferred on the Commodore.

Another discovery was made of two marines, and a boy, who were not included in the list of the ship's company. These had till now kept themselves carefully concealed. It was no longer possible to send them on shore, because we were at too great a distance from the land;

accordingly the Admiral allowed them to make the voyage.

As I had already been a few voyages, I imagined, that I had acquired a sufficient habit of a sea life, to be no longer incommoded by the motion of the ship; but this habit had long been lost; and indeed I was sea-sick, during the first three days after our leaving Brest. I had several times occasion to remark in the course of the voyage which I have recently made, that it was necessary for me to remain only a little while on shore, to lose the habit of the sea; so that whenever we sailed again, even after a very short stay in port, I was for two or three days almost as much indisposed as on my departure from Brest. Seamen, in this case, recommend eating, notwithstanding the disgust occasioned by the nausea peculiar to this kind of affection. It is not easy to coincide in that opinion; for, besides a great difficulty of deglutition, the lodgment of aliments in the stomach increases the nausea; it is an additional evil, when a person is obliged to bring them up again.

Diluting drinks, taken in a small quantity at a time, in order to assist the contractile powers of the stomach, afforded me constant relief; lukewarm water, slightly sweetened, was the drink of which I then generally made use, because

cause it is that which is most easily procured in a ship.

There were on board, however, several persons who, although they had never before been at sea, experienced no effect from the motion of the ship. Such a constitution is very desirable when a man undertakes long voyages; for it is difficult to express the unpleasant feelings occasioned by this spasmodic affection, which, extending to every part of the body, throws a person into such a state of languor, that he hangs to life, only because he has a feeble prospect of a period to his sufferings.

From our departure, till the 5th of October, the winds were faint and variable, between the west and the north; they blew afterwards pretty fresh, varying from north-east to north, till our arrival at Teneriffe. We were not free from uneasiness respecting this increase of the wind; for, in our situation, it might become fatal to us. Incumbered in every part, with a lading far too considerable for the ship's bearings, we might overset in a heavy sea, the stowage being very incompletely arranged. It was in this state of disorder that we had sailed, although the National Assembly had, near eight months before, decreed that the voyage should take place.

On the 11th of October, about fifty-five minutes after ten o'clock, there was an eclipse of

the moon. It is very difficult to make, at sea, such an observation of it as can be relied on: Citizen Willaumez, however, deduced from his, $18^{\circ} 59' 45''$ of west longitude.

The *Espérance* made the signal for land on the 12th, about eight o'clock in the morning.

At noon, we reckoned ourselves fourteen myriameters from the Peak of Teneriffe, which was seen to the south-east by south, majestically rearing its head above the clouds.

On the approach of night, we were at the distance of only two myriameters from the north-east point of the island. We kept standing off and on under our topsails, waiting for daylight. As soon as it began to appear, we approached the coast, which we ranged along at the distance of a kilometer.

We cast anchor about half past nine o'clock in the morning on the 13th, in the road of Santa Cruz, in ten fathoms water, over a bottom of black muddy sand.

Citizen Fonspertuis, the French Consul, immediately came on board, and offered the Admiral to do every thing that he could, towards supplying the wants of our two ships.

I went on shore in the afternoon, in order to view the environs of the town. Although the season was already advanced, the reverberation of the rays of the sun, by the volcanic stones, occasioned

passioned a heat so much the more inconvenient, as the dead calm left them their full power.

I remarked among the plants which grow in the environs of Santa Cruz, a woody melissa, known to botanists under the name of *melissa fruticosa*, the *saccharum Teneriffæ*, the *cacalia kleinia*, the *datura metel*, the *clrysanthemum fructescens*, &c.

The beautiful tree known by the name of the fair poinciana (*poinciana pulcherrima*) constituted the ornament of some of the gardens.

This same evening, Citizen Ely, struck by the odd garb of some women belonging to the town, who, at the time even of the greatest heat, wear a sort of very thick woollen cloak, was employed in taking a sketch of them, when a sentry came and interrupted him, thinking that he was taking a plan of the road. It was to no purpose that he shewed him that he was only copying a dress; the soldier would not let him finish his drawing.

We had brought up too near a small vessel: for this reason, we in the afternoon carried out an anchor towards the shore, by means of which we kept at a proper distance from her.

Our bearings, taken from this point, were as follow:

The redoubt to the north of the town, north-east by east, 4° east, and the great tower situated about

about the middle of the town, west-south-west.

On the 14th, at sunrise, each of the forts returned with nine guns, the salute which we had given them with the like number. We had fired a salute of fifteen for the citadel, which returned it gun for gun, about noon.

A packet, arriving from Spain, came and anchored in the road.

We had formed the project of undertaking, the very next day, a journey to the Peak, and of visiting successively the high mountains of the island. The French Consul was anxious to afford us all the assistance in his power, and he gave us a letter of recommendation for M. de Cologant, a respectable merchant residing at Orotava.

On the 15th, about four o'clock in the morning, we repaired to the Mole, to the number of eight; namely, Develle, one of the officers of our ship; Piron, Deschamps, Lahaye, three servants, and myself: one of the servants was sufficiently acquainted with the Spanish language to act as our interpreter. We found on the landing-place, by the sea-side, some of the mules which were destined for us; but upwards of an hour elapsed before we were able to begin our journey; for it was no easy matter to assemble some of the guides, who, knowing very well that we should

not

not set off without them, were in no fear of making us wait. As soon as they were arrived, we thought we might move forward ; but they chose to hold a long conversation among themselves, before they would take charge of the few articles for which we had occasion in this journey.

It may not be improper to mention, that our shipmates had furnished us with provisions, as if we were going to travel in some savage country. Roffel, who was caterer of the gun-room mess, had given orders to the cook to make us an excellent salmon *pâté*. I should not have noticed the circumstance, did it not form a singular contrast with the worm-eaten biscuit and cheese, with which we were regaled in most of the other ports we touched at in the sequel.

M. de Cologant, apprised by the French Consul of the object of our journey, invited us to stop at his house at the harbour of Orotava. This town, which is only three myriameters and a half from Santa Cruz, is one of the best places to halt at in going to the Peak ; for it is at the foot of the mountains which are nearest to it.

We were three hours in travelling to Lagouna. This town is only a myriameter from Santa Cruz ; but the road to it is very fatiguing, for it is mostly up hill. The houses are ill built, and

and very thinly inhabited. The convents here are extremely numerous. We were informed that the monks composed at least one half of the population.

In our way to Lagouna we had just crossed arid mountains, covered with a few succulent plants, among which we had remarked the Canary leafless euphorbia (*euphorbia Canariensis*), the *euphorbia dendroides*, the *cacalia kleinia*, and the species of Indian fig to which botanists have given the name of *cactus opuntia*. These vegetables, which live almost entirely at the expense of the atmosphere, thrive very well on the sterility of those steep declivities. Having reached the small plain in which the town is built, we had the pleasure to see that it was not gratuitously that the vegetable mould of the surrounding mountains had been washed away by the rains, since it had come and fertilized this little corner of land, in which is produced a great deal of wheat, maize, millet, &c.

I gathered a species of *periploca*, which I had already brought from my voyage up the Levant. I have published an account of it in my second *Decade of the Plants of Syria*, under the name of *periploca angustifolia*. Citizen Desfontaines had also brought the same species from the coast of Barbary.

All the stones which we had hitherto met with had undergone the action of fire. As these mountains of middling elevation, are composed of great masses, which, at the time of their fusion, must have long preserved an extraordinary degree of heat, I naturally expected to find the lava very compact. Indeed it is so ; its grain is very fine, and its most usual colour is a dark brown.

In the midst of these volcanic fragments we experienced great heat, which incommodeed our guides much more than us ; accordingly they employed every means of persuasion to induce us to halt during the whole day, in order to travel only by night. They probably imagined that we had no other intention than to see the summit of the Peak. Such a plan of travelling would not have displeased several of our party ; but it was not difficult to make them sensible that this nocturnal visit could not suit naturalists.

The inhabitants of this island are from their birth overwhelmed by religious prejudices. Children came out of their houses to ask us if we were of their religion : we contented ourselves with pitying these unfortunate beings, over whom fanaticism and monastic intolerance exercise, with so much power, their dangerous sway.

The pretty fern, known by the name of *tricominæ Canariense*, clothes most of the walls which

serve

serve as a fence to the gardens that we met with beyond Lagouna.

On approaching the harbour of Orotava, we descended by gentle declivities; it was no longer those barren mountains of the environs of Santa Cruz, whose succulent plants announce sterility, but charming hillocks, covered with vines, which form the principal wealth of the island.

The shrub known by the name of *bosea yerva-mora* was growing in the bottoms.

It was five o'clock in the afternoon when we arrived at Orotava, where M. de Cogant received us in the best manner.

Two ships, the one Dutch and the other English, were then lying in the road, for the purpose of taking in a cargo of wine. The landing-place here is still more inconvenient than that at Santa Cruz; and, indeed, this roadstead is less frequented.

The cellar of M. de Cogant naturally excited our curiosity; for this rich merchant carries on a very extensive trade in the wines of the island.

Among the different qualities of wines which it produces, there are two very distinct sorts; namely, the dry wine, and that which is called malmsey: in the making of the latter particular care is taken to concentrate strongly the saccharine part of the grape.

A pipe

A pipe of the best wine then cost a hundred and twenty piastres; that of the most inferior quality cost sixty. It is proper to observe, that I am not speaking of the price at which it is sold to foreigners; for the same wine of sixty piastres is had for six and thirty by the inhabitants of the island.

When the fermentation of these wines is well advanced, it is customary to mix with them a great deal of brandy, in order to make them keep. Indeed they are very heady; many persons cannot drink them, even in a small quantity, without feeling their nerves affected by the disagreeable sensation which this mixture occasions.

We were assured that the island commonly furnishes thirty thousand pipes of wine a year.

As it does not grow corn sufficient for the consumption of the inhabitants, part of the produce of the wines, which are sold in foreign countries for Madeira, from which they in other respects differ very little, is employed in the purchase of that article of the first necessity.

The olive-tree, which thrives very well in this island, is however little propagated. The papaw-tree, and the date-tree, which are cultivated in some of the gardens, are considered only as objects of curiosity.

Before we left Santa Cruz, we had been told that the top of the Peak was covered with snow.

I would not bring a barometer ; but we learnt at Orotava that we had been misinformed, when it was no longer in my power to procure this mean of observation *:

We were to set out early the next morning on our journey towards the Peak. But it was a festival, and our guides would not have stirred without having been to mass ; some of them had heard three ; as for us, we were waiting with the most lively impatience, when our uneasiness increased, on learning that it was a very particular favour for them to think of travelling on so solemn a day. However, they were ready to depart about nine o'clock in the morning:

As soon as we had got out of the town, we ascended by roads often very steep, whence we perceived enormous heaps of mountains piled one upon another, and rising in the form of an amphitheatre, as far as the base of the Peak. Their brows now and then afforded us spots tolerably level, which served us as so many resting-places, where, after having ascended by very steep paths,

* It appears by La Pérouse's voyage, that at the time of his anchoring in the road of Santa Cruz, Lamanon having carried the barometer to the top of the Peak of Teneriffe, the mercury had fallen to 18 inches 4 lines, the thermometer then standing at $9\frac{3}{5}^{\circ}$ above 0 ; while at Santa Cruz the mercury in the barometer was at the same instant at 28 inches 3 lines, the thermometer indicating at the same place $24\frac{1}{2}^{\circ}$.

we took breath for a moment, in order to attack with more courage, the upper mountains.

Our guides were astonished to see some of us perform this journey on foot, contrary to the custom of most of the travellers who come to visit the Peak ; so much so, that they for a long time continued to entreat us to mount the mules which they had brought for our accommodation.

After having crossed some beautiful plantations of vines, we found ourselves in the midst of chesnut-trees, which grow in the most elevated regions.

In the ravines I met with the Virginia polipodium (*polipodium Virginicum*), and several new species of laurel ; among which I remarked that known by the name of Indian laurel (*laurus Indica*, Linn.).

Although this journey was not to be prolonged beyond a few days, we had, very properly, been advised to carry several pairs of shoes ; for the best are soon worn out by the lava on which it is continually requisite to walk.

It was hardly noon, when we had reached the clouds that diffused a heavy dew on the shrubs, in the midst of which we had to pass.

The abundance of rain with which the natural disposition of the air is impregnated on these heights, should produce a great number of springs. They are, however, here very scarce ;

for the earth is not sufficiently attenuated to retain the rain water, which filtering through these volcanic substances, in general runs and discharges itself into the ocean, without having formed any rivulets *.

As soon as we had passed through these thick mists, we enjoyed the finest sight of which it is possible to form an idea. The clouds that had been just gathering beneath us, mingled themselves in the distance with the waters of the sea, concealing from us the view of the island ; we beheld the clearest sky ; the Peak appeared then like an island, the base of which seemed to be immerged in a vast ocean.

Scarcely had I got out of the clouds, when I saw for a moment a phenomenon which I had had occasion to observe several times during my stay on the high mountains of Kefrouan, in Asia

* It is to be remarked, that when high mountains are strongly heated by the rays of the sun, they become a sort of focus, above which rises the surrounding air, on account of the dilatation which it experiences therefrom ; whence results the abundance of the more distant air, which, coming to replace that which rises, brings with it the clouds it is charged with, as I have had an opportunity of remarking very frequently on Mount Libanus, where this phenomenon never failed to happen about five o'clock in the afternoon, in the heat of the month of August, when too violent an agitation of the atmosphere did not counteract this natural bias. This is perhaps the sole cause of the apparent attraction of the clouds by mountains.

Minor. It was with fresh surprise that I perceived all the contours of my body traced in the beautiful colours of the rainbow, on some clouds that were below me, on the side opposite to the sun.

The solar rays, which are dissolved in passing on the surface of bodies, give a very just explanation of this brilliant phenomenon. It represents, on a large scale, the experiment known to natural philosophers, by which the rays that are just made to pass on the surface of an opaque body, situated at the opening of a window, represent all the contours of that body in the colours of the rainbow, after having been concentrated in the middle of a lens, in order to be afterwards received on a piece of white paper.

We had just passed over prodigious heaps of pumice-stones, among which we remarked few vegetables, and these were very weak. Some brooms were the only shrubs that prospered at such an elevation.

We walked with considerable difficulty over these volcanic fragments, for we sunk into them half way up the leg.

Some blocks of *pozzolana* were here spread at a pretty great distance from each other.

It was nine o'clock in the evening, when we took up our quarters for the night in the midst of the lava, some large fragments of which were

the only shelter we had against the easterly wind that was then blowing pretty strong. The cold was very intense at this height, where nature has not consulted the wants of travellers, for wood is here very scarce; indeed, the little fire that it was possible for us to make, did not prevent us from passing a very bad night.

At length the day began to appear.

We then left some of our guides with their mules in the place where we had just spent the night, and took the road to the Peak, the summit of which we were soon to reach.

We continued walking for an hour over considerable heaps of fragments of grayish lava, among which we saw scattered here and there, blocks of *pozzolana*, and large masses of a very compact blackish glass, which is extremely like bottle-glass. Although made in the immense crucibles of these mountains, at the time of their combustion, this glass would not on that account be the less fit to become useful in the arts, since, being completely formed by nature, it would require only the process of fire necessary for melting it, in order to be qualified for receiving from the hand of man every form of which it is susceptible.

The cavern, on the brink of which we arrived, is called *La queve del ana*. It is a full meter and a half wide at its mouth; as its depth is

is upwards of two meters in an almost perpendicular direction, we could get to the bottom of it, only by descending by means of a rope. We here found some water, the surface of which, as we naturally expected at this elevation, was covered with ice near half a decimeter in thickness. It was immediately broken, and we quenched our thirst with very good water. I did not experience from it any unpleasant sensation in my throat, as I had so frequently remarked in the French Alps, in satisfying my drought with water which issues from the foot of the Glaciers, although the coldness of the water of this cavern was a degree below that which is commonly indicated by the water of the Glaciers; for the thermometer that I dipped into it, fell to the freezing point. It should seem, then, that it is to the privation of atmospheric air that is owing the disagreeable irritation which the water taken up at the foot of the Glaciers, occasions in the inside of the throat.

The inside of this grotto was lined with flakes of nitre.

Piron had been unwell for several days; he felt himself too much fatigued to go farther; Deschamps chose not to proceed beyond the cavern, while we continued to ascend towards the summit of the Peak.

Having come to its base, which forms the cap of the highest mountains, we saw it rise in the

form of a cone, to a prodigious elevation. Hence our prospect soared above all the mountains, which form as it were so many flights of steps that we had been obliged to ascend, in order to arrive at this spot.

The place called *La Ramblette*, situated towards the north-west, offered to our curiosity a few apertures made in the rock ; some were a decimeter in width ; others were simple clests, whence issued a watery vapour, without smell, although their brinks were covered with crystals of sulphur, placed on a very white earth, which had every appearance of clay.

A mercurial thermometer, graduated according to Reaumur's scale, was introduced into some of these apertures, where, in the space of a minute, it indicated 43° above 0. In several others, the mercury rose only to 30° .

We were now arrived at the place the most difficult to climb up, for the Peak is very steep. Having reached about one third of its elevation, although the surface of the ground was not heated in a greater degree than is commonly experienced at such a height, I was induced to dig a hole about a double decimeter in depth, whence immediately issued a watery and inodorous smell, and where the thermometer when introduced stood at 51° above 0.

The *spartium supranubium* was the last shrub that I met with before I arrived at the foot of the cone ;

cone; but there is an herbaceous plant, which, notwithstanding its apparent delicacy, vegetates at a still greater elevation. This is a violet with leaves rather elongated, and slightly toothed at the edges: its flower was already faded; it grows quite close to the summit of the Peak, where we soon arrived. The vapours of the atmosphere not being able to rise at this height, the sky shews itself in all its brightness, and shines with an azure more brilliant and more striking than in the finest days of our climates; a few clouds scattered here and there, far below our feet, did not conceal the prospect of the neighbouring islands.

This summit is terminated by a brow, the greatest elevation of which is towards the north-west. To the south-west I remarked a very sensible depression, which seems to have been produced by the sinking of the lands.

Quite close to its point are seen several apertures, at most a decimeter in width, whence issues a very hot vapour, which causes Reaumur's thermometer to rise to 67° above 0, producing a noise somewhat similar to the buzzing of bees. When, in the advanced season of the year, the snow whitens the summit of the Peak, that which falls near to these apertures does not long withstand such a degree of heat. Beautiful crystals of sulphur, most of them in the form of needles, among which I saw some of a regular

shape, adorn the brinks of these tunnels. The sulphuric acid, joined to the water, has occasioned in the neighbouring volcanic productions such an alteration, that they might be taken for very white clay, rendered extremely ductile by the humidity which is constantly issuing from these apertures. It is on this earth that are found adhering the beautiful crystals of sulphur, of which I have just spoken.

The decomposition of the sulphur, and of the volcanic productions, produces here an alumino-salt, like extremely fine needles, which covers the surface of the earth.

The thermometer observed in the shade for upwards of a quarter of an hour, on the summit of the Peak, at a meter from the ground, rose to 15° above 0 ; it did not vary perceptibly, whether it was placed nearer to it, or farther from it, even at the distance of two or three meters : this induces me to think that the internal heat of the earth, although very great, has little influence on that of the atmospheric air. Besides, the atmospheric air may probably receive from the rays of the sun 15° of heat at this elevation, since a greater heat is frequently felt at the foot of our Glaciers. The thermometer carried to Mount Libanus, quite close to the snow, has often given me 20° above 0.

The declivity of the mountain favoured our return,

return, and we went down much quicker than we had ascended.

The day was far spent, when we repaired to the spot where we had passed the preceding night. The almost total privation of the sun, occasioned by the excessive cold which we had here experienced, had deprived us of the wish of making it again our resting-place. We would have liked to be able to proceed immediately, in order to seek a better shelter on some less elevated mountain: but our guides not choosing to stir before the rise of the moon, we were obliged to stay here till near midnight, waiting till it appeared on the horizon. It was by the feeble light of this planet, that we descended over the pumice-stones, by a road at no great distance from that which we had travelled in climbing up these lofty mountains.

After walking for four hours, the shrubs, which grew very thick, rendered the road so difficult to pass as to oblige us to halt till daylight. We were no longer, as the preceding night, in that spot destitute of wood; and, indeed, we made ourselves ample amends by a large fire, which was immediately kindled. While we were warming ourselves, very much at our ease, the conversation turned upon what remained for us to do. The greater part, fatigued by this labourious excursion, had no other desire than to proceed

ceed to Santa Cruz by the shortest road. We had however agreed at Orotava, that on our return we should follow the back of these mountains. But we had not all the same views; accordingly we let go on board those who had no longer any wish to gratify; and the gardener and I remained, with the intention of continuing our researches. All the guides would follow those who were going on board; and I had no small difficulty in persuading one of them to accompany us.

Among the plants which bedecked the declivity of the rocks, I had the pleasure of finding the beautiful campanula with gold-colour flowers, (*campanula aurea*), the *prenanthes pinnata*, the *adiantum reniforme*, a species of *adiantum*, remarkable for its foliage, which is much larger than that of Europe.

As water was very scarce on these heights, we directed our steps towards a small dwelling, near which we rightly presumed that there must flow some rivulet. In fact, we found a fine spring, the water of which, equally delicious and limpid, lost itself in the bosom of the earth, after having appeared an instant on its surface.

Apple-trees, loaded with fruit, adorned the garden of these peaceable inhabitants: this fruit afforded so much satisfaction to a servant belonging to the ship, that while we were employed in visiting

visiting the environs of this little settlement, he took it into his head to make an exchange which gave us a very bad idea of his foresight. He had just bartered all our provisions of meat for some apples, without troubling himself whether apples would be a good stock for rambling over the mountains. We fully determined to employ another time a more intelligent steward. It may not be amiss to remark, that ship servants are generally little qualified for any service on shore.

We were very far from any habitation, at the approach of night. It was near nine o'clock in the evening, when we arrived at a village where hospitality is certainly not the characteristic virtue of the inhabitants. It was not without the utmost difficulty that we there found any shelter. As we did not understand Spanish, we could express ourselves only by signs; and at night, above all, this sort of language is of very little service. But our guide, who was as desirous as ourselves to find a place to sleep in, went about, knocking in vain at all the doors; when, after having gone through almost the whole village, we met with two worthy people who were so good as to afford us an asylum.

We were immediately served with a frugal repast, during which, we were lighted in the manner of some inhabitants of our Alps; small

splinters of very resinous fir stuck into the wall, were burning, giving us sufficient light, but far too much smoke. One of our hosts took care to replace these bits of wood, as fast as they were consumed.

We had more need of rest than food; accordingly we soon fell into a sleep, which was the more pleasant, as it was not now disturbed by the cold of the high mountains.

The next day, the 19th, I went on board, loaded with volcanic productions and some very pretty plants, among which were the *teucrium betonicum*, *vechium frutescens*, &c.

The birds called *Canaries* are very common in the lower regions of these mountains; they are all of a brown, mixed with different colours, and their plumage is not so handsome as in a state of domesticity. Some travellers have asserted, that there was in the island a species of parrot which is there indigenous. I never met with one in any of our excursions; and several inhabitants, worthy of credit, told me that this assertion was altogether unfounded.

This same day a very fresh breeze had increased the sea, so that it threw on the beach the *Espérance*'s boat, which was riding at a grapnel, near the slip, after having overset her on a sailor, who could not be extricated for some minutes: he was apparently dead; but, fortunately,

nately, the means which are employed in such cases, restored him to life.

In here testifying my gratitude to the garrison of Santa Cruz, for the eagerness which they shewed in assisting this poor fellow, I cannot pass over in silence a piece of roguery of some of the inhabitants of the town.

This sailor's clothes were hung up to dry, while assistance was administered to him: none of us could have had the smallest suspicion of what happened. Some people belonging to the town, taking him, perhaps, already for dead, thought that his clothes ought to turn to the account of the living: they were stolen, without its being possible to discover the thieves.

Citizens Riche and Blavier had, a day after us, undertaken a journey to the Peak; but these two naturalists could not ascend to the summit; they were still very far from it, when their lungs, not being able to withstand so rarefied an atmosphere, they were seized with a spitting of blood, and were obliged to renounce their enterprise.

The following days were employed in visiting the environs of Santa Cruz, where the country is in general very barren.

The town, even in proportion to its little extent, affords a very thin population, although its roadstead is the most frequented of the island. The Spaniards have here introduced their style

of building ; the inside of their houses is laid out in the same manner as that which they have adopted in Europe, without any of the modifications to which the difference of the climate ought, perhaps, to have given birth.

The governor-general of the Canaries makes Santa Cruz his usual residence.

There are here several convents of men and of women. A parish-church, where gilding is distributed with all the profusion of false taste, is likewise to be remarked for the bad choice of its pictures.

In the public square there is to be seen a handsome fountain ; the water is conveyed from a great distance across the mountains, by wooden pipes. The streets are ill paved ; most of the windows are without glass ; they are shut by Venetian blinds, which the women draw up very often, when their curiosity or some other motive induces them to let themselves be seen.

The rich women are dressed in the French taste : the others cover their shoulders with a piece of coarse woollen stuff, which forms a sort of cloak extremely inconvenient, under a very warm sky ; a hat of black felt, with a broad brim, shelters them from the rays of the sun ; their skin is darkened by a mixture with the natives of the island ; and their features, in general, are far from being agreeable.

The

The multiplicity of religious customs introduced among the inhabitants, did not prevent many of these women from coming, with a chaplet in their hands, to meet our sailors, whenever they went on shore: several had long to repent having suffered themselves to be seduced by so many charms.

The wine of Teneriffe, which, as I have already remarked, is very heady, had like to have been fatal to one of our soldiers; being drunk, he committed a very serious offence against a sentinel. Our Consul employed the interest which he had with the officer commanding in the absence of the Governor-general, to stop all prosecution against this man, who was more to be pitied than blamed.

The discipline established on board English ships of war, secures them from similar inconveniences. The Scorpion sloop, of sixteen guns and a hundred men, commanded by Captain Benjamin Hallowell, had anchored in the road on the 18th, in company with a small cutter, having come from Madeira five days before: they had left there a fifty-gun ship, which was shortly to sail for Teneriffe. Commodore Inglefield, who commanded her, was the senior officer of this little squadron, which was destined for the coast of Africa. These navigators, knowing how dangerous it is to sailors

sailors to stay on shore, keep them on board. Nothing but the duty of the ship could induce the Captain to let them set their foot on land. The Commodore fully intended not to relax from this rule, during all his station on the coast of Africa.

The variation of the magnetic needle observed on board, and deduced from sixteen observations, fourteen of which were by azimuths, and two by easterly amplitudes, was found to be $18^{\circ} 7' 7''$ west.

The result of two observations made on shore upon the flat roof of a house in the town, by Citizen Bertrand, one of the astronomers of the expedition, was $21^{\circ} 33'$ west.

Another observation, made on the Mole, with an azimuth compass, gave $23^{\circ} 43'$ of west variation. So much difference, at such little distances, probably arises only from the quantity of ferruginous substances distributed unequally in these volcanic mountains.

From these observations, those which were made on board seem to inspire more confidence, as they agree with the progressive decrease of the variation observed since our departure from Brest, and with that which had for a long time been observed by many other navigators.

The dip of the needle (this was a flat needle) was

was $62^{\circ} 25'$. The same needle had given $71^{\circ} 30'$ dip at Brest, and $72^{\circ} 56'$ at Paris.

The place in which we anchored in the road of Teneriffe was in the latitude of $28^{\circ} 29' 35''$ north, and in the longitude of $18^{\circ} 36'$ west.

The thermometer and barometer, observed on board, towards noon, varied a little during our stay at this anchorage; the former did not exceed $20^{\circ} \frac{2}{5}$, and the latter 28 inches 2 lines.

Water, which is very good at Santa Cruz, is easily procured there when the swell is not too heavy.

This is an excellent refreshing-place on account of the facility with which are procured in abundance, all the vegetables of Europe, with the exception of cabbages, which, although very small, are very dear. Here are generally found all the fruits of Europe, and the same domestic animals as in our ports of France.

Experience taught us that their sheep do not bear the confinement of a ship so well as ours; the pure air which they breathe on the mountains, renders them very unfit for supporting the noxious vapours of the between-decks.

At Teneriffe may be procured fish preserved by desiccation; in particular, a great trade is carried on there of the species known by the name of *bonito*.

The parts of the island which it has been pos-
sible

fible to cultivate, are extremely fertile: this is the property of volcanic islands. The internal heat of these sorts of lands, raises to their surface a portion of the waters with which they are soaked by the rains, and thus gives to vegetation a more than ordinary vigour.

The too slow decomposition of some of these volcanic stones, and the dryness of some mountains, are so many causes which render several other places little fit for culture; the action of the fire, which has successively extended, at epochs very distant from each other, to the different parts of the island, as is attested by historical monuments, and the preservation of plants which are peculiar to it, has, in these different places, retarded the period of a decomposition, without which vegetation cannot take place.

There had been no volcanic eruption on the island of Teneriffe for ninety-two years, when, in the month of June 1798, there broke out a new volcano on the south-west side of the Peak, as I was informed by Citizen Gicquel, an officer in our navy, who touched at Santa Cruz on his return from the Isle of France in the *Régénérée* frigate.

The following is the account of it given him by Citizen Le Gros, Consul of the French republic:

“ On

“ On the 21st Prairial, 6th year (June 9th, 1798), the inhabitants of Santa Cruz heard some hollow and repeated noises, which very much resembled the report of cannon fired at a great distance; in the night there was a slight earthquake; and it was known the next day that a volcano had broken out on the south-west side of the Peak. At the beginning of the eruption they reckoned fifteen craters; these were soon reduced to twelve, and at the end of a month there were to be seen only two, whence continually issued large rocks, which, vomited forth with the lava, followed their projectile motion, frequently for fifteen seconds, before they again fell to the ground.”

We had been so encumbered till our arrival at this anchorage, that it had not been possible to berth properly all the ship's company.



CHAPTER II.

We leave Teneriffe to proceed to the Cape of Good Hope.—Different observations.—Shining phenomenon in the sea, singularly phosphoric.—An experiment which makes me acquainted with the most ordinary cause of the phosphorescence of sea-water.—Four of the Teneriffe sheep thrown overboard, and for what reason.—Faint degree of heat quite close to the line.—A much greater variation of the compass to the south than to the north of the equator.—A very easy method that we employ for sweetening the fresh water which was beginning to putrefy.—A very thick fog, which occasions an elevation of the mercury in the barometer.—A lunar rainbow.—Arrival at the Cape of Good Hope.

A HEAVY swell had, for near two days, prevented us from shipping our supplies. We were not ready to sail till the 23d of October.

Very early in the morning we began to weigh. All the boats had been hoisted in the day before, after we had unmoored; for it was necessary to endeavour to take advantage of the land breeze which seldom fails to spring up every morning. Besides, it was proper to anticipate the period of the flood, which was to make about half past five o'clock.

We

We rode by a hawser made fast to the English sloop of war. I must not omit this opportunity of speaking in praise of the handsome behaviour of the Captain, who, in the most obliging manner, made a point of giving us all the assistance that we wanted for getting under way. Our Admiral had, on his part, employed every means of being useful to him when he had come, a few days after us, and anchored in this road.

A tow-line run out to the buoy of the English sloop served us to cast by; and after having loosed our sails, we left the coast, by means of a light air of wind which lasted too short a time for the *Espérance* to take advantage of it, although she had got under sail a few minutes after us. Carried away by the flood, which immediately made, she was obliged to drop a kedge anchor, and warp ahead by it, in order to extricate herself from the ships in the midst of which she lay, and get clear of the coast.

It was half past nine o'clock before she joined us. The course was then fixed at south by west.

At noon we were in the latitude of $28^{\circ} 5' 40''$ north, and our longitude was $18^{\circ} 36' 40''$ west. We at the same time set the Peak of Teneriffe, bearing west 28° north, and the east part of the island of Canary, east 24° south.

About one o'clock in the afternoon the course

was altered to south-west by south, in order to run between the Cape de Verd islands and the main. We had then a pretty fresh breeze from the eastward.

About six in the evening the island of Gomera bore north 38° west.

On the 26th the *Espérance* let us know her longitude, after having asked ours. The great difference that was found between that resulting from the dead reckoning and that which the observation had given, left us some doubts, which determined us to bear up two points to starboard of the south-west by south course that we were steering before; but some subsequent observations made us resume our first direction. The weather being very fine, we had nothing to fear in approaching the coast of Africa; besides, the lead would have apprised us of its distance several myriameters at sea.

The next morning we were out of sight of land, which now left us no doubt respecting the error in the longitude indicated by the time-keepers on board the *Espérance*.

We crossed the tropic of Cancer about one o'clock in the afternoon, in the longitude of 20° west.

The barometer was then at 28 inches 2 lines $\frac{8}{10}$, and the thermomètre at $19^{\circ} \frac{8}{10}$.

The first fish that came and bit at the hook
of

of one of our fishermen was a very fine dolphin (*coryphaena hippurus*): Nothing more was necessary to set the whole ship's company in motion; but the fisherman having hauled it in with too much haste, had the mortification to find only a part of the jaw on the end of his hook.

Since our departure from Teneriffe the wind had varied little from the north-east.

A common swallow (*hirundo rustica*) newly arrived from Europe, followed us for some time without choosing to alight on our ship: it soon directed its flight towards the coast of Africa, where it was certain of finding the insects on which it subsists. We were then in 20° north latitude, and 22° 30' west longitude.

There being little wind, we saw floating, in great numbers, on the surface of the water, the medusa, known to naturalists by the name of *medusa caravella*, Linn. This species should not be handled without precaution; for, like several other sea-nettles, it occasions blisters after a painful pricking.

The fish known by the name of remora or suck-fish (*echeneis remora*, Linn.) generally follows the shark, to which it attaches itself, because it finds means of subsistence in the excrements of that voracious animal. It does not however accompany it in a manner sufficiently exclusive not to follow also very frequently other

large fishes, and even ships, to the bottom of which it sticks when it is tired of swimming. We saw several of them alongside, which went from time to time and fastened themselves to ours.

During the night we fell in with a numerous shoal of dolphins, which followed our vessel: as they made a much more rapid progress than us, they several times ran round the ship, swimming with great velocity. It was easy to follow them with the eye, although the night was very dark; for they left behind them a luminous trace: this phosphoric light, which was produced by the agitated sea-water, was the more brilliant as the darkness increased, and as the fish advanced with greater swiftness: its course was then perfectly distinguishable, even at several meters below the surface of the water.

On the 30th, we were in the seas where are met with the ravenous fishes, such as the bonito, the tunny, and others of the same genus, which there find an abundant subsistence in pursuing various sorts of fishes, and in particular the flying-fish (*exocætus volitans*, Linn.). The bonitoes, which followed us, suffered themselves to be taken with the bait thrown out to them by our fishermen; this, however, was nothing more than a few feathers so disposed, that they exhibited to the eyes of this animal the appearance of a flying-fish, and concealed the hook.

We

We had had, for some time, a little calm weather, but the trade winds soon began to resume their strength. They were again interrupted, on the 3d of November, by a storm which lasted the whole night; and they blew the next morning as the preceding days.

On the 6th they left us in latitude $9^{\circ} 6'$ north, and longitude 21° west.

We experienced an oppressive heat, although the thermometer (I still mean that of Reaumur) stood at only 23° above 0.

The *goeland noir* of Buffon (*larus marinus*, Linn.), which had come and settled on the sprit-sail yard, escaped from one of our people, at the moment when he was on the point of laying hold of it.

A prodigious quantity of bonitoes neither quitted us night nor day; it was very astonishing that this fish was able to follow us so long, without resting itself.

On board the *espérance* the fishermen were very successful, while the fish seemed to avoid our lines.

The *motteux* of Buffon (*motacilla œnanthe*, Linn.), which, as is well known, is a bird of passage, fatigued with having crossed the seas, came and let itself be caught on board.

We experienced calms for seventeen days in a parallel of 5° in latitude; we got out of them

only by storms followed by winds, which blew in squalls from east-north-east to south-south-west, after having gone round by the south.

The petrel, or storm-bird (*procellaria pelagica*, Linn.), is not so certain a harbinger of storms, but that its sudden appearance is sometimes followed by calms for several days. We took a pleasure in seeing these small birds come within a little distance of the stern of our ship, to seek their food on the surface of the sea.

We were concerned to find that the vegetables and fruits purchased at Teneriffe did not keep; the heats and the humidity which are experienced in this region of calms, very rapidly hastened their decomposition; it was to be presumed that, having been gathered under a pretty warm and dry sky, they would have kept better than those of Europe.

A small shark (*squalus carcharias*, Linn.), which was not more than a meter long, became a victim to its voracity. Nothing comes amiss to this animal when it is pressed by hunger. When it was hauled in upon deck, it was soon cut in pieces, and every one carried off his bit. The shark, however, is not good eating; independently of the repugnance which its fondness for human flesh naturally inspires, it is rather difficult of digestion: but at sea there is not much choice

choice of food, and fresh provisions are always preferred to salt meat.

I found adhering in pretty large numbers to the internal coats, and the superior opening of its stomach, some worms of the *doris* genus of Linnaeus, which were two centimeters in length: although the shark was dead, they did not easily quit their hold; I saw now and then project the two tentacles which form one of the distinctive characters of this genus.

The mouth of the shark being situated beneath an elongated rostrum, subjects it to the necessity of turning almost on its back to snap at the objects which it perceives above it; its whitish belly, which is then distinguishable, even at a great depth, on account of the limpidity of the sea-water, apprises the fisherman when he should draw in the line, in order to hook this voracious animal.

Nature has taken good care that it should not let its prey escape; for, besides several rows of teeth, arranged in a manner the most fit for cutting the hardest substances, the inside of its mouth is furnished with asperities which counteract the retreat of the bodies that it has just seized.

The ships which trade to India would not have missed the opportunity of collecting the fins of this animal, which are in request with the

the Chinese, because they consider them as a powerful aphrodisiac.

The heat was intolerable when there was not a breeze ; the thermometer, however, indicated but 23° above 0 ; though we were no more than 9° to the northward of the equator, and in the longitude of $20^{\circ} 50'$ east. It should seem that in these seas the thermometer is a very incorrect measure of the sensible heat ; for, although it stood at some degrees below what it frequently indicates in Europe in a fine season, we experienced, not the less, an excessive perspiration, which produced some very troublesome eruptions.

The mercury in the barometer does not, as is well known, undergo much variation between the tropics : the greatest did not exceed 1 line $\frac{1}{2}$. It varied little from the height of 28 inches 2 lines, although we had had some very great storms, which, being formed on the continent of Africa, from which we were almost at the distance of sixty myriameters, were brought to us by north-east and east-north-east winds.

On the 12th, we caught the fish known to ichthyologists by the name of *balistes verrucosus*.

We were surrounded by grampus, which were followed, in their slow progress, by sharks attracted by their excrements.

A heavy

A heavy swell from the south-east announced winds from the same quarter, which were blowing at a distance towards the equator, though, however, north-east winds are more generally observed here at this season, when the sun is for near two months in the tropic of Capricorn.

A shark, preceded by some fishes known by the name of pilot-fish (*gasterosteus ductor*, Linn.), came near the ship and was caught: several remoras, or suck-fish, thinking themselves in safety because they had fastened to the body of this animal, remained sticking to it for some time after it had been hauled in.

As it was extremely hot, and the sea was very smooth, the desire of bathing getting the better of every other consideration, Piron and Saint-Agnan jumped overboard a few hours after, at the risk of becoming the prey of some other shark.

It had been calm almost the whole day. About eight o'clock in the evening, the sky, loaded with thick clouds in the south-east, threatened us with a violent storm. The night was very dark; immediately a luminous column of great extent issued from beneath these clouds, and, in its descent, came and alighted on the surface of the water: the sparkling sea was still shaded with many dark intervals, when all on a sudden it appeared like a sheet of fire which was spreading

ing towards us ; it was propelled by a very strong wind, which furrowed the waves ; we saw ourselves surrounded by a sea of fire, and we then enjoyed the sight of one of the most brilliant phenomena of nature. It did not last long ; but, during the rest of the night, the sea was much more luminous than ordinary in all the places where it was agitated, particularly in the wake of the ship, and towards the top of the waves.

The violence of the squall had compelled us to lower the topsails, and even to bear up, for fear of being taken aback.

The heat had been oppressive during the whole day. We were abreast of the opening of the immense gulf which forms the bight of the countries of Upper Guinea, the coast of which extends near three hundred myriameters to the eastward.

The sea is far more phosphoric in the vicinity of the coasts which lie under the tropics than any where else ; nature having there distributed with greater profusion the animalcules on which its phosphorescence depends, as I have had occasion to remark in seas very distant from each other : I shall presently give a few details respecting this phenomenon.

As we were placed to leeward of this gulf, the currents had thence brought the luminous bodies, which are there extremely numerous ; but

but it required a particular circumstance to produce so bright a light. The clouds, from which had issued the wind that had recently agitated the water, had spread in the atmosphere a super-abundance of electric matter, which contributed to give the sea the lustre with which we had seen it shine. It was by the great recession of the two little balls of my electrometer, when exposed to the air, that I was able to judge how electric our atmosphere was become.

A faint breeze from the south-east gave us the hope of getting out of those calms, which are here met with in a much greater extent than in any other part of the sea : it is particularly in going to India that these contrarieties are the greatest ; they appear to depend on the vicinity of the coast which navigators approach much nearer in going to the Cape of Good Hope, than in the route from the Cape to Europe ; accordingly the passages from the Cape to Europe are generally much shorter than those from Europe to the Cape.

Many skilful seamen are of opinion, that, in going to the Cape of Good Hope, there is an advantage in crossing the equator much farther to the westward than is commonly done.

The calms that are met with to the northward of the equator are owing to the configuration of the coast of Africa, which to the north,

a few degrees from the line, projects near three hundred myriameters toward the west; while the great distance at which a ship is from this land when she is to the southward of the equator, prevents the general winds of these seas from undergoing thence any change.

I had preserved a few bottles of sea-water, taken up the evening before during its phosphorescence, to examine the little luminous bodies which are the cause of this phenomenon. This water, poured into a glass, was set in motion in the dark. I immediately saw some luminous globules which differed in no respect from those which are commonly remarked when the sea is agitated. It appeared to me quite an easy matter to try to separate these bodies, in order to see whether the water would still preserve its phosphoric quality: I strained it through a piece of white-brown paper: some molecules, very gelatinous and transparent, the size of which was almost a third of a millimeter, remained in the strainer, and from that time this sea-water lost all its phosphorescence, which I restored to it at pleasure, by throwing therein the little molecules. It was necessary not to leave these diminutive animals exposed long to the air, for they soon lost all their phosphoric properties.

I have several times repeated the same experiment in seas very distant from each other, and I have

I have constantly found the same animalcules, which I consider as the most ordinary cause of the phosphorescence of sea-water. However, they alone have not the property of rendering the sea luminous ; several species of crabs, some very large molecules, &c. often quit the bottom of the waters to come and illuminate their surface : I have frequently seen these phosphoric molecules of the size of a double decimeter ; but I have always found, at the same time, the little luminous bodies which I have mentioned.

In the course of this day we learnt, that, on board of the *Espérance*, four of the sheep procured at Teneriffe had been thrown overboard, it having been imagined that these animals discovered some symptoms of the disease which is said to have been brought to us from America. On this occasion were passed on the monks of the island a great many bad jokes, which I take to be void of foundation : I think, on the contrary, that if the sheep had been more strictly examined, the ship's company would not have been deprived of this supply of fresh provisions.

Winds from the south-south-east, which began to blow on the 21st of November, in the latitude of $4^{\circ} 31'$ north, and longitude of $18^{\circ} 36'$ west, at length carried us out of these calms, which at this season of the year most commonly

prevail some degrees more to the south before ships get into the general winds.

The bird known by the name of man-of-war bird (*pelicanus aquilus*, Linn.) was the object of our admiration. On the 24th we perceived two, which, hovering at a prodigious height, were watching their prey, and waiting till it appeared on the surface of the water.

These birds, no doubt, keep at this great elevation in order to embrace with their eyes an immense space; but it is very astonishing that they can see from such a distance the small fishes on which they most commonly feed: so penetrating a sight depends, perhaps, more on the disposition of the humours of the eye than on the great sensibility of the retina. This investigation is worthy of the attention of the natural philosopher.

The man-of-war bird, as is well known, is very ravenous after flying-fishes. As soon as it perceives any, it descends from the upper regions of the atmosphere, and comes to fly at about a hectometer above the surface of the sea; there it remains ready to seize them as soon as they rise out of the water. All the motions of the man-of-war bird are directed with admirable address: it does not descend head foremost, like the other birds which seek their food under water; with the feet and tail placed horizontally

on

on the same level, it strikes the upper column of the air with its wings, and then raising them again, and fixing them one against the other above its back, that they may no longer oppose any resistance to the air, it darts on its prey, and seizes it at a little distance from the water.

While admiring the astonishing address of this bird, the wishes of all of us were in favour of the flying-fish; but it seldom escapes. As it does not rise much above the sea, the man-of-war bird would run the risk of falling headlong therein, if it did not know how to stop itself in its descent, by lowering its wings, in order to rise again and pursue another prey.

Notwithstanding the faculty which Nature has given to flying-fishes of living in the water, and of coming out of it at pleasure, it is difficult for them to avoid their numerous enemies: if they escape the voracity of the bonitoes, tunnies, and dolphins, by rising out of the water, the man-of-war bird waits for them in the air; some of them, during this conflict, came and leaped into the ship.

I found in the stomach of several bonitoes a great number of worms which must be classed among those of the genus *fasciola* of Linnæus, although their lower extremity, which is almost cylindrical, has a very prominent swelling. Their

size is two centimeters: they are terminated by a tube which is half the length of their body.

The south-east and south winds blew with so much obstinacy, that we were not able to cross the equator till the 28th, about eleven o'clock at night, in the longitude of 26° west, while it had been proposed to cross it 8 or 10° more to the eastward.

It is not usual, at this epoch, to experience, in these parts, winds which hang so long to the south and south-east; for, the sun being already far advanced in the tropic of Capricorn, the general winds commonly draw to the eastward. The six or eight miles which we had been daily carried to the northward when we were detained by the calms, and the swell that came from the south and south-east, brought us acquainted with the unexpected constancy of these winds.

The thermometer observed at noon, for the last week, had not stood at more than 22° , and frequently 21° , although we were very near the equator: it is astonishing to see, that, at so small a distance from the line, this instrument did not indicate a greater degree of heat: but, besides the general causes, such as the perviousness of the waters of the sea to the sun's rays, the little density of the water, and its evaporation, which hinder the atmosphere from imbibing as much heat

heat as on land, in the same latitude we had for some days had a light breeze, which had not a little contributed to cool the air.

Seamen are in the habits of christening, in their way, the persons who cross the line for the first time; in French ships this baptism is performed by souping them with several buckets of salt water; this is sometimes practised in such a manner as to divert those who are sure of not being sluiced. One of the sailors, who is called *Le bon homme la ligne*, descends from the main-top with an oakum beard, and comes and presides at this nautical entertainment *.

The

* It may not be uninteresting to some readers to have a more particular account of this ceremony, as practised on board of English men of war.

Whenever a ship crosses the line or the tropics, one of the seamen, who is supposed to be "a fellow of infinite jest," being dressed in a whimsical manner to represent Neptune, goes over the bows, and, through a speaking trumpet, hails the ship, asking her name; that of her commander; whence she came; and whither she is bound? These questions being resolved, he rises majestically from the briny waves, and wielding his trident, comes on the forecastle, accompanied by his consort, who is personated by another seaman, also fantastically attired. Being seated in his car (which is previously prepared, and is generally composed of a half-tub fixed on a grating, lashed to capstern bars), he is borne on the shoulders of his suite, and carried in procession from the forecastle to the quarter-deck. The watery god there welcomes the captain to his dominions, and expresses a hope that he will have no objection to his levy-

The Admiral, fearing that we should not all equally relish this farce, forbade that any person should be ducked.

On the 29th of November, the sea-water, by Beaumé's areometer for salts, gave me $3^{\circ} \frac{1}{4}$, when we were in half a degree of south latitude.

The currents set us to the westward. The winds, as is well known, are, in this vast sea, the principal cause of the different direction of the waters.

We had every reason to be apprehensive of a long passage; besides, the *Espérance* did not hold so good a wind as us. We were afraid that the want of water would oblige us to touch on the coast of Brazil; this circumstance would

ing among the officers and people who have never before visited them, his accustomed tribute, which consists of a shilling each from the men, and a present in liquor from the officers. Such of the ship's company as are unable to pay this tribute, are obliged to submit to the penalty of being shaved, in order to be in a condition to be presented to his aquatic majesty. This ceremony is performed in the following manner: the novice being seated over a large tub of salt water, in lieu of a lather of soap, his chin is besmeared with tar, and a piece of rusty iron hoop supplies the place of a razor. The operation is terminated by the insolvent tributary undergoing first a ducking in the tub over which he sits, and afterwards a copious ablution of salt-water from Neptune's attendant Tritons. It is almost unnecessary to add, that the rest of the day is spent in the sort of conviviality congenial to the disposition of British tars. T.

have

have been the more vexatious, as it would have totally deranged the plan of our voyage; for it was necessary for us to follow the seasons, in order to explore part of the countries that we were to visit.

On the 17th of December we passed the tropic of Capricorn, in the longitude of 28° west.

On board the *Espérance* were taken upwards of a hundred bonitoes a day, while all our most expert fishermen together never caught more than ten in a day, and even that very seldom. It was not, however, immaterial to the health of the ships' companies whether they lived on fresh provisions or salt-meat.

On the 18th of December, when we were in the latitude of $25^{\circ} 20'$ south, and in the longitude of $28^{\circ} 42'$ west, the thermometer observed at noon stood at 19° above 0, and at 17° before sun-rise, although that luminary was not far from our zenith. The cold had been so great during the night, as to oblige our people to wear their woollen clothes.

We had depended on westerly winds on approaching the coast of Brazil; they were, on the contrary, from the eastward; but having drawn ast, we had been enabled to go free for a fortnight, till we arrived at the 28th degree of south latitude, and the 24th of west longitude.

It was to be presumed that in this latitude we should meet with variable winds, which would favour our route towards the Cape of Good Hope ; but they varied only to be more contrary to us.

On the 26th of December we had still south-easterly winds, although we had passed the latitude of $29\frac{1}{2}^{\circ}$ south. The sun, which for several months past extended its greatest heat in this hemisphere, had receded from the limits of the general winds.

The length of our passage occasioned our allowance of water to be reduced to a bottle a day each man.

As soon as the winds had got round to the north-east and north, the currents, which before set to the westward, became scarcely perceptible.

Although on the 27th we were at a very great distance from the Cape of Good Hope, we already perceived the albatross (*diomedea exulans*), which is there found in considerable numbers.

A circumstance worthy of remark is the variation of the compass being much greater to the southward than to the northward of the equator ; for from the 14th degree of north latitude to the equator, in the space comprised between the 23d and 26th degrees of west longitude, the difference was only 3° , or from 14° to 11° ; while in the same space in latitude towards the south, and 4° of west longitude, that is, from the 26th degree

gree to the 30th, the variation of the compass extended from 11° to 3° towards the west, which makes 8° of variation south of the equator, while north of it the needle had varied only 3° in a space almost as great.

Is not the proximity of the coast of Brazil one of the principal causes of this difference?

The least variation observed was $1^{\circ} 50'$ in the latitude of 25° south, and longitude of 29° west. There is no doubt that the difference of longitude in these seas has much more influence on the variation of the magnetic needle, than the difference of latitude. The variation sensibly increased as we advanced to the eastward.

One of the officers took the distances of the moon from the sun, in a position somewhat inconvenient, with one of Dollond's brass sextants, the radius of which was two double decimeters: he perceived a cause of error, which it would have been difficult to suspect. The radii of this instrument, although extremely heavy, were still so weak as to bend, and thus cause a derangement in the pararellism of the glasses, when the observer rested it with a little weight against his breast. The same effect did not take place in the wooden sextants, because their radii being much thicker, do not yield to the force which affects those made of brass.

This source of error is an additional reason for giving an exclusive preference to the reflecting circle

circle of Citizen Borda. The facility with which, by means of cross observations, is corrected the error that might proceed from the graduation, gives it a very decided superiority over all others, when it is wished to ascertain the longitude by the observation of distances of the moon from the sun, or from a star.

I am sorry that this valuable instrument, although extremely easy to be used, is as yet little known. Each of our officers had one, which in the course of the voyage became an instrument to be depended on in the hands of all.

An observer, of any experience, may ascertain the longitude within two or three myriameters. We have reason to hope that in proportion as the lunar tables shall acquire greater perfection, the calculation of the longitudes from these observations will be still much nearer the truth.

The plants which I had collected at Teneriffe, although quite dry at the time of my departure, had, while we had remained under the tropics, become covered with a very thick mildew, which was attached to the under part of the leaves, where, as is well known, the absorbent pores are extremely numerous; and my collections had been greatly damaged.

The water kept in a state of dissolution by the air, by means of the direct heat of the sun, is in the open sea, between the tropics, so much more abundant than that with which the air can be loaded

loaded without such a heat, that every thing that is not exposed to the sun is affected by great humidity; it is, for this reason, very difficult there to preserve from rust iron instruments, and even the best polished steel.

During the whole time that we remained between the tropics, the mercury in the barometer had not risen above 28 inches 4 lines, and it had not fallen below 28 inches $1\frac{1}{10}$ line.

We were well aware that our stock of water would not preserve its purity in the suffocating heats which we experienced; but it would have been difficult to presume, that, having on board some means very easy to be adopted for sweetening the water, before the daily allowance was served out, these means would not have been effectually employed.

The water kept on shipboard, undergoes in long passages the same decomposition as stagnant waters, and this decomposition is singularly accelerated by the heat of the climate. There then arises from it so great a quantity of inflammable air, that a person runs a risk of being suffocated in going down into the hold where it is deposited. This accident however is very uncommon, because the opening which leads thither, allows part of these noxious miasmata to escape. It is not the less true, that these often produce nervous fevers, the malignity of which is proportionate

tionate to the degree of heat that decomposes the water.

As this gas, the specific gravity of which was first ascertained by Priestley, is much lighter than the atmospheric air, and as it has besides little adherence to the water, it is easy to separate the former from the latter, and to restore to this beverage its primitive purity: for this it is sufficient to agitate it for a quarter of an hour.

We had on board a machine which perfectly answered this end: it was a large tub of the size of a double hectoliter: when it was three fourths filled with water, there were turned round in its middle, by means of a winch and a catch-wheel, four large iron plates disposed in the form of a cross; the water then received a strong agitation, which, by disengaging the inflammable gas with which it was impregnated, restored to it, at the same time, the pure air of which it had been partly deprived; and, however tainted it was before, it did not, in a very little while, differ from the best water.

This process, which is very easily executed, completely resolves the numerous series of questions which some natural philosophers have proposed to navigators, respecting the means of rendering fresh water drinkable when it becomes putrid on board a ship.

It

It will hardly be believed, that, with so simple a mean of sweetening water, there was often distributed to us some in almost as putrid a state as if it had just come out of the hold; but the astonishment will cease, when it is known that the officer of the watch, charged to superintend this operation, generally abandoned it to the care of a sailor, who, being soon tired of turning the winch, almost always thought the water sufficiently agitated before it was drinkable: it would have been more proper to have entrusted the superintendance of this operation to the surgeon, as several of us observed; for it was not indifferent to the health of all, whether it was well or ill executed: However, the officer of the watch did not the less continue to be left charged with this duty.

On the 29th of December, with a sky entirely free from clouds, the thermometer stood at $17^{\circ} \frac{3}{4}$, and the barometer at 28 inches $3 \frac{9}{10}$ lines, when the wind, at north-by-east, brought us all on a sudden, about noon, a very thick fog, which concealed from us, for a quarter of an hour, the sight of the sun. It is very remarkable, that, instead of occasioning a fall of the mercury in the barometer, this fog made it rise $1 \frac{1}{2}$ line during the whole time that it surrounded us. I dare not hazard any conjecture in attempting to give an explanation of this phenomenon: it will

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the more astonish natural philosophers, as it should seem that this circumstance ought to have diminished the elasticity of the air, instead of increasing it; besides, nothing announced that this fog was occasioned by the explosion of a volcano.

On the 3d of January 1792, we enjoyed the sight of a rainbow, produced by the rays of the moon: this planet was, about ten o'clock at night, surrounded by two concentric circles; they exhibited all the colours of the rainbow in an order opposed to each other. The largest of these circles did not occupy more than five degrees in the heavens. As this phenomenon, produced by the decomposition of the light of the moon, appeared between her and us, the colours of the iris must necessarily present themselves in the inverse order of those which the sun displays; since, in this latter case, the spectator is between the rainbow and the planet; accordingly, the smallest circle, which gave to its inner edge a red colour, was terminated outwardly by a violet colour, while the violet formed the inner edge of the largest circle, and the red its outer edge.

We were then in the latitude of $32^{\circ} 42'$ south, and longitude 7° west.

On the 7th of January, in the afternoon, we passed

passed under the meridian of Paris, in the latitude of 33° south.

After having dipped Beaumé's areometer into sea-water, in order to ascertain its specific weight, I had $3^{\circ}\frac{4}{5}$, which affords the same result as that I had already obtained in the vicinity of the equator. It should therefore appear, that the saltiness of sea-water differs not perceptibly, even at great distances in seas so unequally heated by the rays of the sun.

On the 9th of January we began to exercise the crews of both ships in firing with ball : a prize of small value was the reward of those who hit the mark, which was fixed at the end of one of the fore-top-mast studding-sail booms. It was observed with pleasure, that most of them took pretty good aim, although they had not been in the least habituated to fire-arms. It was not a matter of indifference on such an expedition, in the course of which we might sometimes be under the necessity of defending ourselves against the savages, that all should know how to use the arms that we had on board.

The Captain of the *espérance* having made fast to a buoy half of a very fine tunny, which he was sending to the Admiral, the line did not come near enough for us to reach it; a sailor jumped overboard, in order to swim after it, although it was known that a shark had been

caught in the morning on board the *espérance*; and that the little wind which then blew must have increased the apprehension of meeting with another, that would perhaps have carried off one of our best seamen.

Having now got into the latitude of 33° south, after having reached the longitude of 5° west, the bonitoes still followed us in very numerous shoals, although it is by no means common to meet with so many in this high latitude. The northerly winds were probably one of the principal causes which lead these fishes far from their habitual abode.

I shall remark, that if our fishermen were less expert than those of the *espérance*, they were also less favoured. It was from the boatswain that were obtained the fishing-lines. Ours, during the whole voyage, distributed them with so niggardly a hand, that in the end he banished from the mind of the sailors all inclination to fish. It was the first lieutenant's duty to make him sensible of the fatal effects of this improper conduct; but he gave himself no concern about the matter.

The sea-nettle known by the name of the *medusa velella*, took advantage of the calm, to come and float in great numbers on the surface of the sea. This species differed in no respect from that which I had repeatedly met with in the

the Mediterranean, where it is a dish in great request with seamen.

It was of the highest importance that we should have vessels that did not leak ; yet scarcely had we left Brest Water before it was necessary to have recourse to the pump. As we made two centimeters of water an hour, we were obliged to pump the ship out twice a day. This precaution was the more indispensable, as the water would have got to our stock of salt ; an object of the greatest consequence in the voyage that we were undertaking. The quantity of water that came into the hold fortunately made no further progress.

The between-decks was so encumbered, that several months elapsed before we could find out the situation of this leak. We at last perceived that it was behind a knee. The ship being lightened, it was discovered that a tree-nail had been forgotten, and that the hole where it ought to have been placed had been covered only with pitch. The water had not been long in penetrating through this coat of stuff ; a bolt was immediately driven into the hole, and the ship leaked no more.

The albatrosses of the Cape of Good Hope, which were seen in pretty large numbers, announced to us the vicinity of this southern extremity of Africa. We in fact got sight of the

land on the 16th of January, about eight o'clock in the morning. We were then at the distance of four myriameters from Table Bay.

The currents, which, at the time of the general winds, had made us lose so much ground, having fortunately taken a contrary direction when we had met with the variable winds, the westing we lost was nearly balanced by the easting we made. Our land-fall at the Cape of Good Hope confirmed this observation. It may easily be conceived, that, with the exception of a few irregularities in the variable winds, the tendency of the waters to find their level must determine those which are in the latitude of these winds to flow back towards the east, in proportion as the general winds carry to the westward those whose course they direct.

The proximity of the land had also been announced to us by a change in the colour of the waters of the sea, which is occasioned by the elevated bottom on which they repose.

Some seals of the species which Buffon has denominated *petit phoque* (*phoca pusilla*, Linn.), came within a small distance of our ship to seek their subsistence in the great heaps of sea-weed, called *fucus pyriferus*, which were seen floating on the surface of the sea: these animals frequently fled, at the same time raising themselves by sudden springs above the water;

then

then their two hind feet, which they drew together in the form of fins, served them as a point of support on the water, the surface of which was to them what a vast plain is to an active quadruped.

We fell rather to leeward of the entrance of Table Bay, which gave us little hopes of reaching the anchorage in the course of the day.

We could have wished for a finer day to make the land; for there fell a great deal of rain, and the shore was often concealed from us by a thick fog.

About seven o'clock in the evening we were a myriameter and a half from the mountain of Hout Bay, which bore from us west $3^{\circ} 45'$ north; the pitch of the Cape north by west; and the Lion's Head west 3° north.

Near this point of bearing we sounded in 130 fathoms water, over a bottom of coral.

The sea was extraordinarily phosphoric during the whole night, which we passed at a little distance from the coast. I remarked a vast quantity of luminous points in all the places where the water was agitated: this phosphorescence differs from that which is commonly observed at sea only by its being more intense, owing to a greater number of phosphoric globules. These little bodies are, as I have already said, much more numerous near the coasts than in the open

sea, in the same latitude. I again examined them, after having strained the water that contained them; they differed in no respect from those which I had before observed: I still distinguished the same little transparent, globular molecules, the size of which was about a third of a millimeter.

A light breeze from the south-west permitted us in the afternoon of the next day, the 17th of January, to direct our route towards the entrance of Table Bay. As soon as it had freshened up a little, we steered, with all sail set, south-east by east, for Hangman's Point, which we ranged very closely along, carrying with us pretty regular soundings from four to five fathoms.

It was half past five o'clock when we anchored in four fathoms water, the bottom gray sand, at the distance of a kilometer from the shore; the town clock bearing west 38° south; the flag-staff of Lion's Rump west 3° north; the pavilion of the northernmost fort west 43° north; and Robben Island north 1° west.

We had not a sick man on board, although the length of our passage had reduced us to a very slender allowance of water; but endeavours had been made to compensate for this privation by a great use of various kinds of antiscorbutics. A sort of punch, very wholesome

some and very pleasant, composed of brandy, vinegar, sugar, and water, had been daily served out to the ships' companies towards the end of this passage. The ship had been fumigated twice a day. The greatest care had been taken to make the sailors change their clothes, whenever they got wet; and it was a satisfaction to see that so many precautions had not been employed in vain.

CHAPTER III.

Stay at the Cape of Good Hope.—Depositions of two French Captains, by which it appears that, being at Batavia, they had learnt from Commodore Hunter, that he had seen at the Admiralty Islands some natives dressed in the uniform of the French navy.—Captain Bligh sent from England to procure the bread-fruit tree at the Society Islands.—Violence of the south-east winds.—Local cause which increases their impetuosity.—A slave-ship.—Various excursions to the mountains in the vicinity of the town.—Impudence of the Fiscal.—Journey to Franche-Hoek.

TWO officers of health of Cape Town came on board to satisfy themselves that we brought no contagious disorders: it is particularly the small-pox which they dread; for that malady, which is not endemical in this country, makes here, as well as throughout all India, the most dreadful ravages when brought from abroad.

A captain of a merchant-ship, arrived from Bourdeaux a few days before us, came also to inform us, that the commander of the naval forces

forces in the Isle of France, after having received some information respecting the fate of La Pérouse, had dispatched to the Cape a frigate to bring an account of it to the commander of the expedition sent in search of that unfortunate navigator. The frigate had sailed some days before to proceed to the Isle of France.

Admiral D'Entrecasteaux immediately sent an officer to wait on the Governor of the Cape, in order to settle the salute. This officer received from the French *Chargé d'Affaires*, the dispatches which Citizen Saint Felix, commander of our naval forces in the Indian seas, had sent to Admiral D'Entrecasteaux by the Atalante frigate, Captain Bolle, who had sailed again almost immediately, to return to the Isle of France.

The following is the letter addressed to the Admiral, with the depositions of two Captains of merchant-vessels, who were at Batavia during the stay that Commodore Hunter made there, on his return from Botany Bay in a Dutch ship, after he had been cast away on Norfolk Island.

Letter from Citizen Saint Felix, Commander on the India Station, to Admiral D'Entrecasteaux.

I learn by private letters, that you do not intend to touch at the Isle of France until your

return from the important expedition which you are going to undertake. Deprived of the hope with which I had flattered myself, of having the honour of seeing you, I hasten to transmit to you, at the Cape of Good Hope, two accounts relative to the object of your mission, which have just been given to me by the Captains of two French ships arrived from Batavia. You will there see by what accident a Dutch ship, having on board Commodore Hunter, commander of the English frigate *Syrius*, as well as his crew, had seen, near the Admiralty Islands in the South Sea, men covered with European cloths, and particularly some clothes which he judged to be French uniforms. You will also see that the Commodore had no doubt of their being the remains of the wreck of M. de la Pérouse, whom he had seen at Botany Bay.

I have thought that the knowledge of these reports would be interesting to you, and have indeed judged them sufficiently important to determine me to make you acquainted with them directly, by a frigate which I send to the Cape solely for this purpose. Captain Bolle, who commands her, will, if he does not find you there, leave my dispatch with the French *Charge d'Affaires*, in order that it may be delivered to you on your arrival. Although no official ac-
counts

counts of your expedition authorize me to send a frigate on this service, I am certain of his Majesty's approbation of the step which I have taken in this respect, as much from the consideration of the public interest, as from the wish of my heart. It was reserved for you to acquire claims to the gratitude of the whole nation, by accepting the command of an expedition, which does equal honour to the sovereign who orders it, and the officer by whom it is executed. Whatever route you may take, you will be followed by my wishes for your success, and by the inviolable and perfect attachment with which I am, &c.

(Signed)

SAINT FELIX.

*Isle of France,
9th November 1791.*

*Account given to the Chef de Division Saint Felix,
Commander on the India Station, by Captain
Préaudet, commanding the Ship Jason, arrived
from Batavia.*

The English frigate *Syrius*, commanded by Commodore Hunter, bound for New Holland, was lost on Norfolk Island, in the South Sea, towards the end of the year 1790. The crew were taken up by the sloop of war which was following her in her mission, and has returned to Botany Bay, where Commodore Phillip freighted a small

a small Dutch vessel to convey to England the shipwrecked crew, with their commander, Commodore Hunter.

Having left Botany Bay in this vessel, and wishing to touch at Batavia, Commodore Hunter was thwarted by the winds and currents, and carried to the eastward as far as the 167th° of longitude from the meridian of Greenwich. Wishing to pass through St. George's Strait, he got sight of the Admiralty Islands, situated in the 147th° of longitude from the meridian of Greenwich, and in 3° 25' south latitude. Near that lying most to the eastward, he saw several boats filled with men covered with European stuffs and pieces of cloth; he could even distinguish the uniform of the French navy. These people made signals with white flags for the ship to approach. For this Commodore Hunter had the strongest desire; but it was impossible to effect it, on account of the contrariety of the currents and winds, and the danger of numerous shoals.

Commodore Hunter had seen La Pérouse at Botany Bay, and was particularly intimate with him. He had learnt from him that it was his intention, on leaving Botany Bay, to pass through St. George's Strait, in order to get to the northward. He has no doubt that it was on these islands that the *Astrolabe* and *Bouffsole*

were:

were lost, in consequence of the calms and violent currents which prevail in that quarter. He told me that he himself was carried to the eastward six hundred miles in ten days by the strength of them, as was proved by repeated observations of the longitude, by time-keepers, and the sight of land. In a word, Commodore Hunter, who was at Batavia, and whom I saw in the voyage I have recently made, appears to me to be fully persuaded, that the European clothes which he observed in the boats that came from the Admiralty Islands, are the remains of the shipwreck of the vessels under the command of La Pérouse.

Commodore Hunter is at present on his passage to return to England, whence France will probably receive from him more circumstantial details on this subject.

After what the English commander has experienced on approaching the Admiralty Islands, he thinks, that a vessel which wished to go thither, ought to take the precaution to get into their latitude in good time, in order to prevent her from being carried away by the currents, which set to the eastward with prodigious rapidity.

Done at the Isle of France, the 6th of November 1791.

(Signed)

PREAUDET,
Captain of the ship Jason.

Account

Account given by Pierre Magon Lépinay, Captain of the Ship Marie-Hélène, arrived from Batavia, to the Chef de Division Saint Felix, Commander on the India Station.

The commander and officers of the English frigate Syrius, after that ship was wrecked on Norfolk Island, were conveyed to Botany Bay, whence they sailed in a small Dutch vessel, which brought them to Batavia at the end of September in that year, after a passage of about six months.

One or two days after having weathered St. George's Channel, very early in the morning they got sight of both the Admiralty Islands, to which they were very near ; they had also sounded without finding bottom.

They saw come out from the islands two large canoes, containing about a dozen men, who would not come on board the vessel, but approached pretty near her. It was then very moderate weather. The vessel had against her rather a strong current, which drove her off the island ; besides, the Dutch Captain was not fond of going near the land. It was remarked, that two of the men who were in the canoes had sashes similar to those worn by officers in Europe ; they made signs as if they wished to be

be shaved ; several of them had on their clothes pieces of red and blue cloth, which proved that they had had some communication with Europeans. As Captain Hunter, commander of the Syrius, had, before his departure from Botany Bay, learned from La Pérouse himself that his plan was to pass through St. George's Channel, the officers of that frigate are all persuaded, that he had unexpectedly fallen in with these islands, and been there lost.

I, the underwritten, do certify, that this account is conformable to what I have gathered from different conversations with the officers of the Syrius frigate, who, after that frigate was wrecked, arrived at Batavia, in a small Dutch vessel that was there when I was in the month of October.

(Signed)

MAGON LEPINAY.

*Isle of France,
31st October 1791.*

As Commodore Hunter, returning from Batavia with his commissioned officers, in order to proceed to England, was at the Cape of Good Hope at the moment of our arrival there, we had a right to expect to receive all possible information

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in regard to what he had seen at the Admiralty Islands. We were not a little surprised that the Commodore set sail from Table Bay two hours after we had dropped anchor. He probably was well acquainted with the object of our mission, for we were expected at the Cape, and the Admiral's flag left no doubt of our being the ships destined to go in search of La Pérouse. It appeared to us very astonishing that he had not himself sought to give us the information which Captains Préaudet and Magon Lépinay had collected from him and his officers at Batavia. We had reason to be very much surprised that Commodore Hunter not only had let transpire at the Cape no account which could make it be believed that he had met with savages dressed in the French naval uniform, but that he had said to several members of the regency, and even to his friend Mr. Gordon, that he had no knowledge of the facts announced on the arrival of the Atalante. Nothing indicated that the details left at the Cape by Captain Bolle, came from Commodore Hunter himself.

Captain Bligh, commanding the English sloop of war Providence, destined to procure the bread-fruit tree from the Society Islands, had come and anchored in Table Bay a short time after the departure of the Atalante. It appeared

peared that Bligh did not learn from Hunter any thing relative to the depositions of the two French captains; but according to the information communicated by the persons who had seen the commander of the Atalante, he assured Colonel Gordon, that, on his return from the Society Islands, he would make inquiries in these seas where it was asserted that La Pérouse had been lost, in order to endeavour to save some remains of his unfortunate expedition.

This was the second time that Captain Bligh went to the Society Islands in quest of the bread-fruit tree; for during the first voyage which he had made to procure this valuable tree for the English colonies in the West Indies, he had been turned out of his ship in consequence of a mutiny which had broken out on board, as he has made known by the narrative which he published on his return to England.

We learnt that the Pandora, an English frigate, commanded by Captain Edwards, had since been at the Society Islands, where he had laid hold of fourteen of the mutineers. She had lost four of them on running aground on the reefs of Norfolk Island. Christian, the master* of the ship of which Bligh was dis-

* This is evidently a mistake of the author. Christian was only master's mate of the Bounty. T.

possessed, and the ringleader of the mutiny, had, with nine sailors, taken refuge in another island, whither he had carried with him several of the natives. An officer of the Pandora, who arrived at the Cape, asserted that Bligh had behaved very improperly to Christian, and that an abuse of authority on the part of this captain had been the cause of his misfortunes. Christian, notwithstanding his rank of master, had been ill-treated by the orders of Bligh, and used as if he had been the lowest sailor. If this fact be true, Bligh has not been sincere in asserting that he had always behaved to him with the greatest kindness.

There were at the Cape eighteen ships, of which twelve were Dutch, two French, two American, and two English.

At sunrise we saluted the citadel with thirteen guns, and our salute was returned with the same number.

The commander of the expedition went on shore about nine o'clock; the citadel upon that occasion fired fifteen guns, which we returned, gun for gun. The governor had sent several carriages, with a band of musicians, to wait for Admiral D'Entrecasteaux, at the landing-place, whence, amid the sound of martial music, he repaired to the government-house, accompanied

accompanied by a few officers. He was received by the Council assembled, who returned his visit almost immediately at the house of the French *Chargé d'Affaires*, where he had alighted.

The greater part of the officers took lodgings on shore.

It is well known that at the Cape of Good Hope the Dutch take a pleasure in accommodating strangers with lodgings at their houses. The most usual price is a piaster a day. I, with some of my shipmates, took up my quarters at the house of M. De Lettre.

Table Mountain was enveloped in thick clouds which covered its summit; a certain prognostication, in this season, of violent winds from the south-east, which generally blow for two or three days together. Till the evening of next day, the breeze was in fact so strong, that during all that time no boat could have any communication with the shore.

Although the clouds appeared stationary upon the summit of the mountain, even when the wind blew with the greatest violence, they were incessantly shifting; but the impulse which they received on quitting that height rendering them more dissoluble, they dispersed in the air. Great parts of these clouds were often seen to break and immediately to disappear.

The south-east wind, shortly after, began to

come down from the heights of this mountain towards Cape Town, with such impetuosity, that it was with difficulty that any person could pass through the streets situated in that direction; it was almost impossible to walk against the wind, for it drove before it, to the height of a man, small stones upwards of a centimeter in thickness, with so much violence, that the people were obliged to take shelter in their houses.

This impetuous wind, of which a number of travellers have spoken, appears to me to be owing to the situation of the lands, which, rising on the sea-shore from Cape Town as far as the west point of the entrance of False Bay, oppose a barrier to the south-east winds. When these winds are engulfed in False Bay, they can follow the same direction only by overcoming that obstacle placed at the southern extremity of Africa. The lower current of air, in rising to the summit of these mountains, is compressed by the higher column, which counteracts its dilatation; it must therefore, as soon as it has cleared these heights, react in proportion to the room it has to spread. Its impetuosity then is such, that it sometimes makes the vessels moored in the road start their anchors, and forces them to put to sea.

It is at the declivity of these high mountains that this wind is in full force; and indeed that

that which is felt at a small distance in the interior of the country, is far less violent, as I had occasion to remark in some excursions which I made to places at different distances from the town.

The clouds with which the summit of the mountains is then covered are naturally produced by that great mass of air, which, after having imbibed a quantity of water from the vast ocean which it has just been agitating, rises in order to clear this summit, where the difference of the temperature makes appear under the form of clouds the water that it can no longer keep in a state of dissolution.

The biscayan * of the *Espérance*, which by the force of the wind had broke adrift during the night from the stern of that ship, was lost. To replace it, a whale-boat was purchased from an American vessel.

Although the south-east wind continued to blow with impetuosity, I went out into the environs of the town, where I found great quantities of the species of *chironia*, designated under the names of *trinervia* and *linoides*. The *gorterja siliaris* was also growing at the foot of

* A *biscayan* is a long, narrow boat, very sharp at each end, and calculated for going through a swell. It derives its name from the province of Biscay, on the coast of which it is in general use, and there called *barca longa*. T.

these mountains. The pretty shrub which is known to naturalists by the name of *brunia paleacea* adorned the first hills by which the ascent commences.

It will be easily believed, that with such a wind the insects had entirely disappeared.

I visited the Company's garden, of which several travellers have spoken with rapture. It is however no more than a vast enclosure, where are to be seen avenues of tolerably fine oaks. Some of the beds are surrounded with myrtles, in the midst of which are cultivated different sorts of vegetables, and a very few exotic flowers. There have been also set here some European fruit-trees; and I likewise remarked the plantain-tree; whose leaves had not been able to resist the violence of the wind, which had cut them into shreds.

There was a very tame bird of the species called *falco serpentarius*, in a house belonging to the Governor.

The ménagerie, which is situated at the end of the garden, contains only a small number of scarce animals; the ostrich, the zebra, the porcupine, the jackal, and a few birds, among which I remarked the *courly à tête nue* of Buffon (*tantalus calvus*, Linn.).

The wind, which in the evening abated considerably, announced to us the return of fine weather.

There.

There was in the road a slave-ship, lately arrived from Mozambique ; four hundred negroes, which formed its cargo, were already landed. It was a very melancholy sight to observe these miserable creatures, most of them scorbutic after a very short passage, crowded together in three small apartments, whence they were to be shortly carried on board, in order to go and support, by the sweat of their brow, the luxury of some rich West Indian. This trade had been carried on in a place where dogs are in great request. The persons who traffic in human flesh do not blush to own that it often happens that they get two or three negroes for one fine dog.

I employed the day of the 22d in visiting Lion Mountain. This mountain, which takes its name from the figure which it exhibits at the distance of a few myriameters at sea, affords a soil little favourable to vegetation. I there remarked, almost every where, even upon the sea-shore, a hard steatites, of a grayish colour, and so parched, that this excursion procured me but a very small number of plants.

On the following day I visited the Devil's Mountain. The impetuous south-east winds, the force of which is much greater at the declivity of this mountain than any where else, have justly procured it that appellation. The charming

valley which separates it from Lion Mountain, is adorned with the beautiful species of *protea* with silvery leaves (*protea argentea*, Linn.), the bushy tops of which resist the winds that occasionally come down with violence from the summit of these mountains. The leaves of these trees are covered with a down, which is the thicker as they are exposed to the action of the air. The same thing is remarked in almost all plants buffeted by the winds; whence it is presumable that this down serves to secure them from the damage they might thence receive.

Here was no longer the sterility of Lion Mountain; vegetable productions presented themselves in abundance. The tulip of the Cape (*shæmanthus coccineus*, Linn.) bedecked the most gradual slopes: a great variety of species of *cricæ* issued from the clests of the steep rocks; and the pretty compound flower known by the name of *Stæbe gnaphaloïdes*, grew with several other plants towards their base.

Being obliged to employ a good deal of time in the preservation of the plants which I had collected the day before, I was not able to undertake a long excursion on the 24th; I therefore contented myself with strolling about the environs of the town.

The bastard aloe, known under the denomination of *agave vivipara*, was still in full flower,

I admired

I admired for some time the lightness with which the titmouse (*parus ater*, Linn.) culled the saccharine juice that exudes from the glands situated at the bottom of the corollas. I killed with regret some of these charming birds, in order to preserve their skin.

Three of us belonging to the expedition were following a narrow path at a short distance from the country-house of the Fiscal, named Dénefs. This man, accustomed to despotic power, attempted to prevent us from passing through uncultivated fields, which he took great care to tell us were his property: we were strangely surprised at such a prohibition. The Fiscal could not suppose that we would have the temerity to pass on. However, after having observed to him that we could do no damage in fields that were uncultivated and covered with stones, we followed our road. This petty Vizier, seeing the little respect which we paid to his orders, and not being able to reply to our observations, flew into a great passion, and said to us in his barbarous jargon, that he had cautioned us, and that there was no need of farther explanation.

Two negroes belonging to the town accompanied us: these poor fellows shuddered at the voice of the Fiscal, and could hardly be persuaded to follow us. They told us, trembling, that it was M. Dénefs who ordered the beatings

that were inflicted in Cape Town, by order of the police.

It is to be observed, that this officer, having the charge of the public money, has a right of inspection of all the persons employed by the Company : his functions are besides independent. It is monstrous to see such a title conferred on the head of the police, who may with impunity commit extortions, for which his place gives him all opportunities ; for he fixes the punishments, and receives their produce : thus a pecuniary penalty only is inflicted on those who can pay, and a beating on those who cannot.

I employed the 25th in visiting Table Mountain, so called from the horizontal plane which its summit presents when seen from a distance.

I several times crossed a brook that runs from this mountain. The large smooth stones which are to be met with on its banks, prove that the waters rush down there in torrents in the rainy season.

I had reached the middle of the mountain, when I found the *thesium strictum*. When I had ascended a little farther I met with the very fine species of *umbella*, known to botanists under the name of *hermas depauperata* ; then came the pretty heath called *acrostichum pectinatum*, the *bubon galbanum*, the *restio simplex*, &c.

I had

I had just clambered up acclivities formed of a very hard free-stone, above which were blocks of quartz of a beautiful white; these masses serve as the base of a micaceous schistus disposed in strata very close to each other.

After having ascended more than two thirds of a kilometer in perpendicular height, I at length reached a break, which when seen from the town did not seem calculated to afford a passage to the top of this mountain: but the distance had deceived me; for I found here a path, the access to which is not difficult to persons accustomed to travel over mountains: it is besides the road most frequented in order to arrive at this summit, which it would not be easy to reach any other way.

Although at near a kilometer of perpendicular height, the heat of the atmosphere caused the thermometer placed in the shade to rise only to 20 degrees.

Fire-wood is very scarce at the Cape of Good Hope. If the mildness of the climate exempts the inhabitants from the necessity of using artificial heat to protect themselves against the inclemency of the weather, still they have occasion for fire to dress their food. Slaves are employed to fetch the little wood that they need, even a good way beyond Table Mountain. We met several

several negroes carrying to the town branches of various shrubs, among which I remarked the *cunonia Capensis*, and many fine species of *protea*. I experienced a great pleasure in seeing these beautiful plants, but it was not a little damped from the consideration that they had been cut only to burn. I took some specimens of them; and the negroes, whose burden I had considerably lightened, continued their way down to Cape Town. We were distressed to see these unfortunate creatures going on without stopping, although the sudden declivity of the mountain seemed to make it absolutely necessary for them to take breath.

The mountains in the neighbourhood of the town serve as an asylum for the runaway slaves, who, from barbarous treatment, have been impelled to desert. Under cover of the night, they, from the pressure of hunger, approach the habitations, in order to obtain by stealth, at the risk of their life, some slender means of subsistence. It is easy to judge of all the horror inspired by the usage that they experience in the town, from the miserable existence to which they give the preference. It would not be unattended with danger to go alone and without arms, near the caverns in the rocks where these wretches, driven by despair, conceal themselves from

from the light of day, in order to escape slavery.

Some drops of water, which in these heights ooze between the strata of a micaceous schistus, afford the traveller the means of quenching his thirst.

The lofty banks of the break by which we ascended were clothed with the most beautiful lilaceous plants, among which the *antholiza Aethiopica* was particularly distinguishable from the brilliancy of its charming scarlet flowers.

Having reached the top of Table Mountain, we were beginning to make an attack upon our provisions, when we saw coming towards us some persons belonging to the *Espérance*, who had made an excursion thither without furnishing themselves with provender: we had the pleasure of sharing with them our frugal repast.

The clouds, which during the preceding days had settled upon the summit of Table Mountain, had occasioned sufficient rain to form little pools in the hollows of the rock, in which I found a great number of pretty plants.

Almost the whole extent of False Bay was to be discovered from the top of the mountain, every part of which I carefully visited. I returned with an abundant collection of vegetables, by the same road that we had followed in ascending;

ascending; and it was dark when we arrived at the town:

On the 26th, after having made all the necessary preparations for preserving the specimens collected the day before, I took a walk to the eastward.

Beyond the head of the bay there is a vast plain of sand, in the midst of which I was astonished to see a prodigious quantity of vegetables. Those which are here most frequently met with, are different species of *diosma*, *polygala*, and *borbonia*; they could not stand so great aridity, if their roots did not penetrate deep into the ground, to seek there the moisture necessary to keep them alive.

I had occasion to cross several rivulets, the waters of which, supplied by the neighbouring mountains, are partly lost in the sands before they reach the sea. It is in these moist spots that grows the beautiful lilaceous plant known under the name of *gethylis spiralis*.

Holes made in the sand are resorted to by snakes, which are frequently found asleep on their edges, but glide into them immediately on the approach of any person.

On the 27th I returned, for the second time, to visit Table Mountain. I deviated a little from the usual road, and I enriched my collection with a number of plants which I had not before found.

It would take a great deal of time to exhaust all the vegetable riches of a country which produces them in so great variety. A heavy fog suddenly covered the summit where I was, and obliged me to come down. Enveloped in so thick a mist, it would have been impossible for me to find my way, had I not been very near the road which led to the foot of the mountain. Although the wind was not high on Table Mountain, the clouds did not the less break after they had passed it, and they became condensed in the same manner as by the impetuous winds from the south-east.

On the 28th I strolled over the environs of the town, and farther increased my collection of plants.

I had hitherto found only a small number of insects; for they do not delight in places so much exposed to the winds.

On the 29th I made an excursion behind Table Mountain, following the road which separates it from Lion Mountain.

The *cyanella Capensis* was growing quite close to the sea-shore.

As soon as we had reached the heights, I had the pleasure of seeing the declivity of the rocks covered with different species of heaths, among which the *erica halicacaba* was distinguishable by its oval form and the beauty of its flowers.

The

The *disa grandiflora*, one of the finest plants of the family of the orchis, adorned the banks of the small rivulets which flowed in these elevated regions.

This excursion was the more agreeable, as I had with me M. Masson, whose travels have added considerably to botanical science.

The following days were employcd in making fresh searches in the spots which I had already visited: their vegetation is so diversified, that I always found new riches.

An English frigate, which had arrived from Tellichery, anchored for five days in Table Bay; she was going to England, with an account of an engagement that had been fought between the French frigate la *Resolue*, Captain Calaman, carrying twelve pounders, and the English frigate *Phœnix*, carrying eighteens. The Captain of the English frigate had wished to examine some French ships under convoy of our frigate.

The English, according to their custom, attempted to spread unsavourable reports respecting the conduct of Captain Calaman, who, by the details which we received from the Isle of France, had, in this affair, conducted himself with equal firmness and greatness of mind. The commander of the *Phœnix* frigate ought to have silenced these rumours, by promulgating the facts; but it appears that he had

an

an interest in disguising them: for it is unheard of, that, under the colours of a frigate of the French government, the English should take the liberty to examine vessels under her convoy.

The Crown, an English line of battle ship, which arrived a day after the frigate, observed the same conduct.

I think it proper to remark, that our commander, having sent an officer on board of these two ships, in order to comply with the civilities customary on such occasions, the two captains had the ill manners to take no notice of this visit.

I had already collected most of the vegetable productions that are to be found at this season in the neighbourhood of the Cape. I could not promise myself a more abundant harvest, without going to a distance. Some mountains, designated by the Dutch under the name of Franche-Hoek, situated to the eastward at a considerably greater distance from the town than their appearance seemed to me to indicate, inspired me for some days with a desire to visit them: their aspect made me hope to find there a great variety of specimens.

I set out on the 9th of February. The gardener belonging to the expedition was of the party.

A Hottentot led a horse that carried our baggage.

gage. For an interpreter we had a young negro, who scarcely knew a word of French.

A passport, with which we were obliged to be provided, was sent to me by M. Berg, one of the most amiable and best informed men in the colony.

Colonel Gordon, the commander of the troops at the Cape, had given me letters of introduction to several of the inhabitants.

Colonel Gordon is the celebrated traveller, who gave Buffon the first just ideas respecting the giraffe, or camelopard, an animal till then little known. This officer, excited by the desire of making discoveries in natural history, penetrated into the interior of Africa, as far as the 21st degree of south latitude. He repeatedly told me, that he made at that distance, of more than 12° north of the Cape, barometrical observations, which proved to him, that the ground was upwards of two kilometers in perpendicular elevation above the level of the sea, without his being able to perceive in his progress any sensible rise in the ground; but, on the contrary, he thought himself in a somewhat elevated plain. These observations, which he repeated several days after, seem to indicate, that the ground rises by an imperceptible acclivity to a height which is not elsewhere found in the highest mountains.

I leave

I leave it to natural philosophers to decide, whether in this case the fall of the mercury in the barometer may not proceed from some other cause than that which produces a similar effect when it is placed in more elevated situations.

We met a number of waggons drawn by three or four pair of oxen; they were returning empty, each led by a Hottentot, who standing about the middle of this carriage, with a long whip in his hand, directed his cattle with wonderful skill. Although the foremost oxen were very far from him, he did not the less certainly hit the part at which he struck, in the ox that he wished to urge on.

Our Hottentot walked along smoking his pipe, and occasionally filling his belly with Hottentot's figs, *mesembryanthemum edule*, that grow on the road-side, in the midst of sands, without thinking of the load of our horse, which he made follow him; accordingly our baggage fell off several times, and would have remained in the middle of the road, had we not attended to the smoker, who always continued his way; it was necessary to frighten him by threats, in order to draw him from his apathy, and make him more attentive.

Different species of *geranium*, *poligala*, *lobelia*, &c. covered the sandy plain, over which we travelled.

Having arrived at places somewhat more elevated, we began to see a few antelopes, but they set off at too great a distance for us to be able to fire at them.

It was two hours after dark before we arrived at Bottelary, at the house of M. Bosman. The letter of recommendation which M. Gordon had given me to this worthy cultivator, procured us a very friendly reception. It was supper-time, and he was at table in the midst of his numerous family. He immediately invited us to take a place beside him, and presented us with a strong agreeable wine of the growth of Bottelary, which some merchants of the town sell at a great price for Constancia; it is, however, much inferior; and indeed M. Bosman observed to us, that it could be got at a twelfth part of the price of the other.

M. Bosman, insulated in the midst of sands, on a small spot of land fit for culture, was naturally eager for news; but the manner in which we made ourselves understood to him was excessively troublesome, for our black interpreter was still more ignorant than we had till then thought him. After having passed a long time in saying very little, we retired to take some repose, of which we were much in need. There was not one of us who did not envy the peaceable life led by this respectable man, in the middle of a

family, who blended the most amiable qualities with great simplicity of manners.

On the 10th, when the day began to dawn, we rambled over the environs of this charming habitation. M. Bosman's garden presented to our view most of the vegetables and fruits of Europe; fine plantations of almond-trees were raised opposite to the house, and it was surrounded with plots of vines, which form the principal wealth of this cultivator.

As soon as the sun appeared in the horizon, M. Bosman's young daughters seeing us employed in picking up insects, wished to contribute towards enriching our collection. They ran about the garden with inconceivable agility, and brought us from time to time a very good choice, among the species, the colours of which were the most brilliant.

As we were shortly to sail from the Cape, we had scarcely time left to visit the mountains of Franche-Hoek. It was with lively regret that we quitted our amiable entertainers.

We arrived early at Stellenbosch, where we stopped at the house of M. Hoffman.

The manner in which we were received at Stellenbosch formed a striking contrast with the free and hearty welcome which we had experienced at Bottelary. We were here in a very handsome village; but we were wrong in expecting that

frank amenity which so much characterises the cultivators of the Cape. I imagined that a letter of introduction from M. Gordon, addressed to M. Hoffman, would be sufficient to make us known; it was not, however, till after a long examination of our passport, that M. Hoffman asked us to stop at his house. There are no inns at Stellenbosch more than at Cape Town; but the Dutch take care to supply the wants of travellers, for a price which prevents the host from being out of pocket. At M. Hoffman's house we were pretty much upon the same footing as at the Cape.

I went next day to visit the hills in the vicinity of Stellenbosch.

The fine tree known to botanists under the name of *brabeium stellulifolium*; remarkable for its fruit, which is shaped nearly like an almond, grew on the banks of a small river that runs through the town.

Some *orchis*, and the species of *protea mellifera*, *pallens*, *speciosa*, with a great many other plants, were here added to my collection.

We set out on the 12th, with an intention of reaching Franche-Hoek that evening.

This place, the name of which indicates the abode of some Frenchmen, serves as an asylum to a few Protestant families, who having been persecuted in Europe on account of their religious

gious opinions, crossed the seas in 1675, in order to fix their abode in this part of Africa, where they were well received by the Governor, Simon Vander Stel, who furnished them with all the means of employing themselves in agriculture.

The south-east wind blew with such force as to retard our progress; it was, however, far from being so violent as that which was at the same time felt at Cape Town, where we learnt on our return, that it had been extremely impetuous. The great difference in the strength of these winds undoubtedly arises from a local cause, as I have already endeavoured to explain.

On the same day, the boat belonging to the *Espérance*, commanded by Citizen Le Grand, not being able to reach the ship, was obliged to run for shelter to leeward of Robben Island.

We had to walk two hours in the dark before we got to *Franche-Hoek*, to the house of M. Gabriel Deprat, to whom I had a letter of introduction. He being absent, one of his neighbours, Jacob de Villiers, came to invite us to take up our quarters at his house, where we were very well received.

The names of these colonists made us hope that we should now find persons who could speak our own language; but although of French extraction, they, being obliged to speak Dutch, had retained no more of their mother-tongue than

the names of their progenitors. The only person that still understood French was a woman of fourscore.

It may not be unacceptable to my countrymen to know the French families that still live in the midst of these mountains; their names are as follow:

Lombart, Faure, Rotif, Blignant, Dupleffis, Marée, Ponté, Naudé, Cronier, Hugo, de Villiers, Marais, de Buisson, le Roux, Deprat, Rousseaux, Villiers, Terróns, Hubert.

We were in a pleasant valley, where the rays of the sun being concentrated by the surrounding mountains, quickly ripen the grape, which forms the principal wealth of these inhabitants: they here also cultivate wheat.

The two following days were employed in climbing the neighbouring heights. Among the number of plants which I here collected in great quantities, were the *protea florida* and *serraria*.

These mountains were formed in a great measure of granite, and a very hard free-stone: the vegetable mould which covers them, goes to fertilize the vallies, where the inhabitants reside; thence they must traverse the sands with which they are surrounded, in order to carry to the town the produce of their culture: this situation is common to all the settlements at a distance from the Cape. Individuals have been obliged to

to go and seek, at more than a hundred myriameters, in the interior of Africa, some spots of land fit for cultivation, which are strewn like so many islets in the midst of a sea of sand, where every one has adopted the kind of culture which appears to him best adapted to the corner of land he has fixed upon to clear. Negro slaves, although employed in the hardest labours, are here generally treated with kindness. It is remarkable that, very different from the Spaniards, who always endeavour to make proselytes, the Dutch leave their slaves in the most perfect ignorance of their religion.

We saw several times, upon the trees, snakes, which the people of the country dread exceedingly; they were watching the birds, which often become their prey.

The zebra is very common in these heights; it sets off with prodigious rapidity at the sight of a man.

The monkey called *magot* by Buffon (*simia inuus*, Linn.) sometimes approached the habitation where we were staying. I was witness to a very singular fact, which gave me a proof of the authority of these animals over their young. A large monkey followed by a very young one, thinking himself perfectly unseen, took hold of the little one with one of his fore-paws, and holding it up from the ground, struck

it a long time with his other paw. If monkies know how to proportion punishment to guilt, the little ape's crime must have been very great, for it was severely beaten.

The olive blackbird of the Cape of Good Hope, the bunting, the starling of the Cape, some wood-peckers, &c. were the birds which I found most common on this short journey.

The near approach of the period of our departure from the Cape obliged us to leave Franche-Hoek much sooner than we could have wished. We were so anxious to proceed to the town, that we took our leave of the worthy Jacob de Villiers on the 14th, at ten o'clock at night, and immediately set out on our return. We travelled all night, and did not arrive at the town the next day till the same hour, having followed the road by Paarl-Berg and Paarde-Berg. This walk could not but be fatiguing to persons, who for several days had scarcely taken any rest; and indeed one of the servants belonging to the *Espérance*, Emard Serpoy, who had accompanied us from his fondness for shooting, was so overpowered by drowsiness in the middle of the night, that he was obliged to sleep in the road for half an hour, before he could continue to follow us. Although this man was very stout, the want of rest had so completely absorbed all his faculties, that it would have been altogether

altogether impossible for him to go farther on, without this short nap.

I learnt with concern, on my return from Franche-Hoek, that we were to lose three of our shipmates; they had just asked the Admiral's permission to leave the ship, not being able to proceed farther on the expedition, on account of their health: these were Bertrand the astronomer, Blavier the naturalist, and Ely the painter. Bertrand had gone some days before to make barometrical observations on Table Mountain, where he had a fall, from which he suffered extremely. I was informed on my return to France, that he did not enjoy the happiness of again seeing his country; for he died at the Cape, a short time after our departure.

Cape Town being built so that all the roofs of the houses are flat, has a tolerably handsome appearance. Its means of defence against the sea have, of late years, been increased.

The Admiral advised me, on account of the ship being so much encumbered, to deposit the collections of natural history, which I had made during my stay at the Cape, with the Agent of the French government, named Gui, who promised to forward them to France by the first opportunity. They have not, however, arrived at the place of their destination. I learnt at the Isle

Isle of France, on my return from the South Sea, that the naturalists, Macé, and Aubert Petit Thouars, had seen them thrown aside in a garret in this Agent's house, a long time after our departure from the Cape, although there had occurred many opportunities of which he might have availed himself, had he been disposed to be faithful to his engagements.

The Cape of Good Hope is one of the parts of the globe which most deserves to fix the attention of a commercial people. From its situation, it forms an almost necessary refreshing-place for ships bound to the East Indies. The provisions which it furnishes are abundant; but the prohibitory regulations daily diminish the number of ships, which endeavour to arrive at their place of destination without touching at this roadstead: others go to St. Helena, where they can be victualled at a cheaper rate.

The mercantile spirit of the Dutch East India Company has often induced them to feign a great scarcity at the Cape, in order to enhance the price of provisions. The cultivators are not allowed to contract directly with foreigners for the produce of their culture, but are obliged to dispose of them to the Company, who often give them not a fourth of the price at which they reserve the right to sell them.

The oppression exercised by the upper agents towards

towards their inferiors, turns also to the prejudice of navigators, who cannot escape the avidity of so many persons leagued against them. The dislike which this cupidity must naturally excite to putting in there, will lead this country to its destruction. A ruinous luxury, which has for some years been introduced among the women, has greatly changed the manners of the inhabitants: the European fashions are there sought after with eagerness.

It is to be regretted, that there have been governments sufficiently blind to their own interest, to leave so long at the disposal of a company of merchants, one of the places the most important to the navigation of India. Besides, political views are, in such an association, very subordinate to the thirst of gain which governs it, and which is frequently contrary to the national interest.

Commissaries coming from Europe were expected to put these affairs on a better footing; but although some were sent out at different times, things remained just as they were.

We replaced at the Cape of Good Hope the provisions which we had expended before our arrival there. It would have been desirable that this supply had also extended to articles of bad quality, with which we had been provided before our departure from Europe. The contractors

tors had there deceived us, respecting the quality of the wine; it had been charged double the ordinary price paid for the best, and for such as would have kept a long time; whereas a part of it was already pricked, on our arrival at the Cape: it would have also been the more important to have changed it, as it was impossible for us to procure any afterwards. We might have had our choice between the country wine and claret, as there was a vessel lying in the bay laden with the latter. I cannot conceive why this step was not taken: our bad wine turned worse and worse, and we were obliged to substitute brandy to it in the course of the expedition. This negligence deprived us of one of the most powerful means of preserving the health of the crew, in a voyage where they were besides exposed to all sorts of privations.

By the observations made on board of the *Recherche*, the berth in which she lay at the Cape was in the latitude of $33^{\circ} 54' 24''$ south, and longitude of $16^{\circ} 4' 25''$ east.

The variation of the magnetic needle was $24^{\circ} 30'$ west.

The astronomer Bertrand determined the place which he made his observatory, situated in the town, at $33^{\circ} 55' 22''$ south latitude, and $16^{\circ} 3' 45''$ east longitude.

He had observed $24^{\circ} 31' 52''$ of westerly variation in the magnetic needle.

The dip of the needle, which was a flat one, was $47^{\circ} 25'$.

The greatest height of the thermometer during the whole time of our being at anchor here, was not more than 25° above 0.

CHAPTER IV.

Departure from the Cape of Good Hope.—Death of the Carpenter of the Recherche.—Various events.—Extraordinary flight of the albatross.—We make the Island of St. Paul.—Its forests on fire.—Prodigious quantity of insects issue from our biscuit.—Violent effect of the sea.—The Admiral is dangerously hurt.—Luminous sparks at the extremity of our conductors.—Large phosphoric molecules:—A mistake in the bearings, taken by Willaumez, occasions us to enter Storm Bay, taking it for Adventure Bay.—General remarks on the variation of the magnetic needle.—Diminution of the phosphorescence of the sea-water, in proportion as we increase our distance from the land.—Direction of the currents.—It is found necessary to warm the place where the time-keepers are deposited.—We anchor in Port D'Entrecasteaux.

WE were now waiting only for a fair wind to quit the Cape, when, on the 16th of February, about ten o'clock in the morning, a breeze sprang up from the south-east, and determined us to weigh anchor. Scarcely were we under sail, before a squall came down from the mountains, and blew with so much violence, that, for

for some little time, the ship would not answer her helm, so that we were in danger of running foul of several vessels that were lying at the anchorage. We very quickly passed them all, and soon gained an offing.

On the 18th, about eight o'clock in the morning, we lost our carpenter, Louis Gargan: he died in consequence of the excesses to which he had abandoned himself during our stay at the Cape. A fever, slight in the beginning, had acquired in the sequel a character of malignity, to which he fell a victim. This loss was the more sensibly felt, as a skilful carpenter is one of the most useful of men, especially in a voyage, the object of which is to make discoveries, in the midst of seas strewn with shoals, where, incessantly exposed to shipwreck, a navigator may not only lose his ships, but with them all hopes of revisiting his country, if he has not the means of constructing a vessel to carry him thither.

Two men, who had concealed themselves on board at the time of our departure from the Cape, did not appear on deck till it was no longer possible to send them on shore. Of course, they were permitted to go with the expedition. The one was a soldier, a deserter from the garrison of the Cape; the other a German, a very skilful workman in mathematical instruments,

instruments, and who had, for nine years, exercised his trade in England. The English, he told us, were carrying him to Botany Bay, with a great number of other persons, transported under the denomination of *convicts*. He assured us that he was banished thither for debt. After having seized an opportunity of escaping from the ship in which he was confined, he had taken refuge in the mountains in the vicinity of Cape Town. He there passed the day in a cavern, and in the evening he went into the town in order to purchase wherewithal to subsist, waiting for the departure of the other persons under sentence of transportation. The talents of this artist could not be employed on board; we could make nothing of him but an armourer, and afterwards a smith. The armourer belonging to the ship had been put on shore at the Cape, on account of illness.

On the 20th of February, with winds from the south-west and south, we weathered Cape Aiguilas at the distance of about two kilometers.

On the 22d we were in latitude 35° south, and longitude 20° east, when we sounded in sixty-two fathoms water, over a bottom of grayish calcareous sand.

The currents had till now carried us to the north-west; but on the 25th they drifted us to the south-west, for we were abreast of the Straits of

Mozam-

Mozambique, the currents of which are, in this season, directed towards the south-west, along the coast of Natal, which was in sight.

On the 26th, the sea was so rough, that a wind-mill, although strongly lashed on the poop, was rolled overboard. As our ship was much too heavily laden, we thought ourselves compensated for this loss by the advantage of being lightened of a weight of sixty-four myriagrams. I know not why we had encumbered ourselves with this almost useless machine, since at the anchorages, where we might have found wheat, we should also have found flour. Besides, a hand-mill, not a sixth part of the weight, would have been less cumbersome, and at the same time more serviceable.

The ship rolled so much, that the pendulums of our time-keepers touched against the fides of their cases, which should have been made a little wider.

We still saw a great many flying-fishes, although we had passed the latitude of 35° south.

The quarter-galleries of both our ships were too low, especially for vessels that did not easily rise to the sea. It was to be feared that they would be carried away, if we had remained in so rough water: the larboard quarter-gallery of the *Espérance* had been already very much damaged.

It is uncommon, at this season of the year, to pass across the Straits of Mozambique at a little distance from land, without meeting with violent storms. The north-east wind came from this large opening, when the gradual fall of eight lines in the mercury of the barometer, announced to us a gale, which blew with almost incredible fury. The electric matter with which the clouds were charged was so abundant, that, notwithstanding the direction given to it by our conductors, the lightning fell several times at the distance of a few meters from the ship. The westerly wind, which brought back fine weather, was preceded by a rise of two lines in the mercury of the barometer. On the 1st of March this wind had raised so heavy a sea, that our consort was often concealed by the height of the waves. That ship, beheld at a few hectometers distance, afforded us a fine sight; we saw her lose herself in the billows, issue from them in an instant, then rise on the top of the sea, shewing, at the same time, a great part of her keel.

On the 3d, we were convinced, by the sea going down, that we had passed the entrance of the Straits of Mozambique; for, notwithstanding the wind continued to blow nearly with the same force as the preceding days, we were sailing on a sea scarcely ruffled, for we were now sheltered

sheltered by the land of Madagascar. We saw floating prodigious heaps of the largest of all the species of sea-weed, the *fucus pyriferus*; it had no doubt been detached from the rocks which skirt this large island. This fucus, which is several decimeters long, has for the petiole of its upper leaves, a protuberance filled with air, which serves to buoy it on the surface of the water; this is the mean which nature employs to make it incline to raise itself from the bottom of the sea in proportion as it grows.

About five o'clock in the afternoon we were surrounded by a great number of whales, which approached us within the distance of at least a hectometer. The Americans come sometimes into these seas in order to catch these enormous fishes; the oil which they extract from them is an ample indemnification for the expenses of the outfit of their ships.

The depositions of Captains Magon Lépinay and Préaudet had determined M. D'Entrecasteaux to proceed as quickly as possible to the Admiralty Islands, where he thought that he might arrive before the return of the east monsoon, after having passed to the northward of New Holland; but we had made very little progress, since, on the 6th of March, we had not reached the 44th degree of east longitude. The fear of being detained at the Moluccas

during the whole period of the east monsoon, which was to commence at the latter end of March, made him resolve to double Cape Diermen, in order to enter the South Sea.

About half past six o'clock in the morning, a boat was sent on board the *Espérance*, to communicate to the Captain this determination. The wind fell all on a sudden, when our ships were very close to each other. A heavy swell increased the danger of this situation. The bowsprit of the *Espérance* was on the point of touching our taffarel, when the boats, which had just been hoisted out, towed us clear.

We found that the currents set to the northward. The biscayan had been employed in making this observation, and, at the moment when we were hoisting her in, one of the ring-bolts, by which she was hooked, broke; she fell into the water, and the compass that had been put in her was lost.

Although we were upwards of two hundred myriameters from the Cape, we perceived several albatrosses (*diomedea exulans*), some of which, resting on the surface of the sea, suffered themselves to be approached within a little distance. They were seen, from time to time, burying their heads deeply in the water in search of food.

The

The manner of flying of these birds is very astonishing. The flapping of their wings is not perceptible ~~at~~^{after} the moment when they take their flight; and very often they, at the same time, employ their feet, which, being palmated, serve them to strike the water repeatedly, in order to raise themselves: this impulse once given, they have no longer any occasion to flap their wings; they keep them very much spread, and seek their prey balancing themselves alternately from right to left, and skimming rapidly along the surface of the sea. The equilibrium thus obtained, serves, no doubt, to accelerate their progress; but it does not seem likely to be sufficient for supporting them in the air. Perhaps an imperceptible tremor of their feathers is the principal cause of this extraordinary flight: on this supposition, they must necessarily have particular muscles; for which reason I think that the anatomy of these birds merits the greatest attention.

The *puffins* of Buffon (*procellaria puffinus*, Linn.) were very numerous in these seas. The flight of this bird is executed by a mechanism analogous to that of the albatross, for it frequently flies a long time without any perceptible flapping of the wings; it is only when it inclines from one side to the other that it is seen to strike the air with its lowest wing, in order to turn about instantly.

The course was fixed at south-east by east, in order to pass between the Islands of St. Paul and of Amsterdam; but the wind having come round to the south-east, we were obliged to stand south-south-west.

On the 7th, about nine o'clock in the evening, the wind brought us a strong smell from the sea; our latitude was then $34^{\circ} 45'$ south, and our longitude $44^{\circ} 5'$ east. In seas less known, we might have apprehended the vicinity of some land. It is probable that this smell proceeded from a heap of sea-weed detached from the coast of Madagascar, and carried to a great distance by the currents.

On the 19th, one of our sailors, being intoxicated, jumped overboard; fortunately it was calm, and he was picked up: this immersion did but increase his drunkenness, and, in his delirium, he would have jumped overboard a second time, had he not been prevented.

With light winds, varying from south-south-east to north-north-west, passing round by the east, we continued for twelve days standing on whatever tack could bring us nearest to the direct course for carrying us between the Islands of Amsterdam and of St. Paul. If this route was the shortest relatively to the distance to be run, it was the most tedious on account of the calms that we experienced, while, by getting directly

directly more to the southward, we should soon have met with very fresh westerly winds, which would have carried us rapidly towards Cape Diemen.

It was not till the 28th of March, that, having reached the latitude of $37^{\circ} 30'$ south, the wind began to blow strong at north-north-west. A great number of various species of mews and boobies announced to us the proximity of land, these birds never going far from it. In fact, we saw it in the south-east, about half past one o'clock in the afternoon; it was the Island of St. Paul, from which we were distant four myriameters. This island, which was discovered by Captain Valming, in 1696, was named the Island of Amsterdam; and that which is more to the southward received the name of the Island of St. Paul. Cook, who surveyed it in his last voyage, has adopted a quite contrary denomination, by calling the Island of Amsterdam that which is the southernmost, and the Island of St. Paul that which is the northernmost: this is the nomenclature that I have followed.

The Island of St. Paul appeared, in the distance, covered with thick clouds, above which rose the summits of the mountains. We were sufficiently near it, about four o'clock, to distinguish perfectly that these clouds were formed on the island, whence issued a thick smoke,

which almost entirely covered it, especially towards the north; flames were seen in different points, and it was soon discovered that the forests were in a blaze; the traces of the fire, and the smoke which appeared successively in different places, exhibited the progress of the conflagration. We shaped our course so as to pass as near as possible to windward of the island: the same species of birds that we had seen a few hours before we got sight of it, were flying in great numbers round the rocks, which served them as a retreat. A great many seals were swimming in the midst of the large heaps of sea-weed detached from the coast, the south side of which we ranged along, at the distance of a demi-kilometer. This steep coast is very safe; the sea followed the direction of it, and would have apprised us of the danger of approaching it, had it been skirted by shoals. Rocks, inclined about 50° from north to south, and which I took to be composed of strata of free-stone, formed the mountains to the southwest, which exhibited great declivities as far as the sea-shore. Farther on to the south, were seen horizontal strata of the same species of stone; thence issued a small rivulet, the waters of which fell into the sea, forming a cascade. Perpendicular surfaces of rock exhibited, on a large scale, those strange forms known under the denomina-

nomination of *lusi*. We observed a thin smoke issue in puffs from a small subterraneous aperture at a little distance from the shore: we were ignorant whether these forests had been set in flames by the subterraneous fire or by the hand of man. I learnt at the Isle of France, at the time of my return from the South Sea, that an American ship had carried to the Islands of Amsterdam and of St. Paul, some men commissioned to extract oil from the seals, which are there very numerous. Notwithstanding our attention to discover if our assistance would not be required, we saw no signal to apprise us that this island was inhabited. Besides, it would have been impossible to have put in there, for we could seek a shelter only to leeward of this land, where the thick smoke would have put us in danger of being suffocated. The smell of this smoke indicated nothing but vegetables on fire.

The mountains slope towards the south-east; so that in favourable weather it would be easy to land on that side. We here saw some little rivulets, which, after a meandering course, mix their waters with those of the sea.

We were only at a small distance from the island when the night came on. This land then appeared all in a blaze; and the smoke, which imbibed all its brightness, gave to the sky a copper-

copper-coloured tint, as at the approach of a storm.

The Island of St. Paul, which is about two myriameters in circumference, is situated in the latitude of $37^{\circ} 56'$ south, and longitude of $75^{\circ} 2'$ east.

The variation of the compass there was $17^{\circ} 30'$ west.

The wind, which continued to blow between the north-west and the south-west, occasioned the mercury in the barometer to descend gradually eight lines; it had, on the 1st of April, stood at 27 inches 7 lines, when some very heavy squalls carried us as much as ten knots an hour before the wind, under the foresail and the main-top-sail, which was lowered on the cap on account of its violence: this was the only day during the whole voyage that we went so fast through the water. We had now reached the latitude of $40^{\circ} 30'$ south, and the longitude of 85° east.

We had hitherto thought that at least we had not been deceived at Brest, respecting the quality of the biscuit; but it was discovered, when too late, that a part of it had already been on shipboard; accordingly, after we had been five months at sea, it was filled with a prodigious number of *larvæ*, which produced little weevils of the species known by the name of *dermestes paniceus*,

paniceus. These insects, with which we were infested, were become extremely troublesome; they came in the evening and burnt themselves in the candle, in so great numbers, that they frequently extinguished it. The larvæ quitted the biscuit to spread through all our provisions; they hopped, bending themselves at the same time, like those which commonly live in cheese. It was a long time before we could conquer the aversion which they occasioned us.

On the 2d, some violent and very frequent squalls rendered various manœuvres necessary; Crétin, the officer of the watch, forgot to shiver the main-topsail before he clued it up, and it was instantly split.

Being, on the 4th of April, in the latitude of 40° south, and longitude of 92° east, we saw a considerable number of birds, among which were gulls and boobies, which seldom go far from land. It is very probable that we were at no great distance from some island or rock. Although we made a good run during the night, we still saw the same species of oceanic birds the next morning. The country that serves them as a refuge, will one day be discovered, when these seas shall be more frequented by navigators.

On the 14th, the mercury in the barometer having fallen from 28 inches 3 lines, to

27 inches 7 lines, announced to us tempestuous winds; they blew from the west and south-west, raising a dreadful sea, which often broke on board: there came one, about five o'clock in the afternoon, which partly taking us under the mizen chains, struck the ship's quarter with such violence, that several of our seamen thought that we had touched on a rock; the shock was terrible, and some of the store-rooms leaked immediately after.

When a heavy sea happens to strike a vessel on the beam, the chains are frequently damaged, the water lodging under the broad planks which keep them off from the side. Would it not be an improvement to substitute to these planks iron stanchions, on which the chains of the chain-wales should rest; or, if the planks were suffered to remain, could not a sheathing be adapted to prevent the sea from acting on them?

The violence of the roll had made the Admiral fall against one of the angles of a bird-organ, intended as a present for some chief of the savages. The surgeon thought that the first of the false ribs had been fractured; the pain was so acute, that the Admiral, in sneezing, fainted away; but he soon recovered.

During the night there was in the atmosphere a superabundance of electric matter, a part of which had just been spent by means of our conductors; at

at their upper extremity was remarked a luminous spark, which repeatedly settled there. The water was more phosphoric than usual.

Towards morning a very heavy sea broke over the gangway, and filled the between-decks. I was awaked suddenly by the water with which my cabin was overflowed, and I imagined for a moment that the vessel was going down. It took a long time to get rid of this body of water. Three or four waves like that we had just shipped, would infallibly have sent us to the bottom. We should not have incurred this danger, if the hatchways had been properly secured.

On the 17th of April, when we were in the latitude of 43° south and longitude of 129° east, there was no variation of the magnetic needle.

On the 19th it was announced to the *Espérance* that the rendezvous, in case of separation, would be Cape Diemen, in Adventure Bay, in lieu of Oyster Bay.

During the night of the 20th, we lay to under the foresail, the proximity of the coast, according to our reckoning, not permitting us to stand on. We sounded, at nine o'clock in the evening, but could not strike ground with a line of eighty fathoms; on hauling in the lead, there came up a great number of phosphoric molecules, the size of which was from one to two decimeters. Now that the

compressibility of water is clearly demonstrated, we know the principal cause which makes these different bodies keep at a greater or less depth, in proportion to their specific weight.

As soon as daylight appeared we made sail, and stood east-north-east.

About half past nine o'clock we perceived a very pointed rock, known by the name of the *Mew stone*; some other rocks and lands of middling height were discerned in the eastern quarter. The coast occasionally exhibited small bights; mountains of moderate elevation were seen at a little distance from the shore, and we could distinguish the large trees which crowned their summit.

It was not long before we arrived at the entrance of a bay open to the south-east. An island was remarked to the eastward; nearer, to the east by north, were discovered some breakers.

The Admiral intended to go and anchor in Adventure Bay. His accident did not yet allow him to leave his cabin; he could direct the course only by the bearings that were given him as soon as they were taken. An incorrect bearing communicated by Citizen Willaumez *, made him give

* On our making Cape Diémen, Willaumez was charged to take the bearings. The commander of the expedition desired to know the bearing of the *Eddystone*. Willaumez sent him word that

give orders for manœuvring so as to enter the bay that was on our larboard hand. In vain we looked for Penguin Island, thinking that we were in Adventure Bay, while in fact we were in Storm Bay, so called by Tasman, because, after having entered it in 1642, in the month of November, he experienced a storm from the south-east, which, blowing dead on the shore, put him in the greatest danger, when he wished to gain an offing.

Being already very high up in this bay, we were perfectly sheltered from the westerly wind. The depth of water was from fifteen to twenty-five fathoms, over a bottom of broken shells. The Admiral was on the point of leaving it, in order to go and spend the night in the offing; however, he determined to dispatch two boats, the one to the northward and the other to the north-west, to try to discover some place of shelter. The boat that had gone to the northward found a cove where our ships could enter: the bottom was good holding ground. Wood and water might easily be procured there: the boat's crew had seen some remains of huts, quite close to

that he had set this rock south 19° west, while it bore south 19° east. The Admiral then gave orders for standing into the bay on our larboard hand, naturally thinking that we were opposite to Adventure Bay.

which

which were heaps of shell-fish that had been broiled by the natives.

It was too late to reach this anchorage before dark. As the weather was fine, it was decided, about five o'clock, to let go the anchor in Storm Bay, in ten fathoms water, over a bottom of gray sand. It was sixty-four days since we had left the Cape. Most of the navigators who have preceded us, have not taken more than from fifty to fifty-five days to make the same run. It is however to be remarked, that they got to the southward as quickly as possible, in order to catch the westerly winds. The route is a little longer; but at sea it is not always in following the shortest track that a ship makes the quickest passage. A navigator should make himself well acquainted with the most usual direction of the winds, in order to go and seek those which are favourable. The night continued to be very fine, although the air was charged with great humidity. We were sheltered from the wind that blew from the south-west and west-north-west, some light squalls of which we nevertheless experienced.

We caught with hook and line a great many fishes, and of very diversified species; among which the most numerous of all was a species of *gadus*.

The variation of the magnetic needle at the time of our passing under the meridian of the Isle

Isle of France, and at the distance of upwards of a hundred and fifty myriameters to the southward, had been 12° more than that which is observed on approaching that island: this is a very great variation in proportion to the difference of latitude.

The greatest westerly variation observed, was on the 3d of March, $30^{\circ} 30'$; our latitude being then $34^{\circ} 30'$ south, and our longitude $37^{\circ} 45'$ east: from this point it continued to diminish, and, in the latitude of 43° south, and longitude of 129° east, we found no variation; it then became easterly, and increased in proportion as we advanced to the eastward.

The westerly variation of the magnetic needle observed at the point where it was the greatest, had been owing more to the change of longitude than to that of latitude; while afterwards, till we were under the meridian of the Isle of France, it seemed to depend much more on the degrees of latitude; for from the point where it had been the greatest as far as to the meridian of that island, after having made 17° of longitude, and $2^{\circ} 30'$ of latitude, the difference of the variation had been only 4° , while in a latitude of 17° more southerly, the variation had been found 12° greater than that of the Isle of France.

The phosphorescence of the sea-water had in this run diminished in proportion to our distance.

from the land ; so that long before we saw the Island of St. Paul, I could scarcely remark any phosphoric bodies when the water was rough.

The thermometer in this passage did not fall lower than 8° above 0, and did not rise higher than 20° .

The mercury in the barometer had risen to 28 inches 7 lines, and had not fallen lower than 27 inches 7 lines.

When in this run we had reached the variable winds, the currents had set us from 10' to 20' a day to the northward ; but being arrived off the south-west coast of New Holland, we had been carried to the eastward. These different directions are owing to the situation of the lands.

Our tables for the correction of the irregular going of the time-keepers, occasioned by the difference of the temperature, extended only to the 15th degree of Reaumur's thermometer, and the arc of the balance-wheel of the time-keeper with weights, was determined only from the 105th degree to the 115th. It had been constantly upwards of 115° , and the temperature of the atmosphere had been very frequently below the 15th $^{\circ}$ of the thermometer. It was necessary to have at least this degree of heat in the place where our time-keepers were deposited. A com-

mon lamp fully answered this purpose; but a lamp with an air-tube was preferred, in order that there might be no smoke.

The same boats returned the next day, the 22d, to sound the entrance of the creek, where we intended to anchor; for there had not been time to complete this operation the day before. About half past nine o'clock we received the agreeable news that it was a well-sheltered harbour, the bottom of which was a muddy sand, where the anchors would hold for ever; the depth of water was not less than three fathoms and a half at about half-flood. The soundings had been from two and a half to four fathoms throughout a great extent of the harbour, which runs into the country for near a demi-myriameter: in every respect it was preferable to Adventure Bay. A ship might here lay in a stock of wood and water with the greatest facility.

A contrary, but light wind, did not prevent us from warping ahead; but scarcely had we proceeded a kilometer on our way, when the wind freshened, and made us resolve to let go an anchor; the *Espérance* however continued warping, and before night she was very near the entrance of the harbour.

The boat sent a fishing had at a single cast of the net brought back fish enough to satisfy every

one with a portion, which was immediately served out.

We were not a little astonished to see among different fishes caught with hook and line during the night, some sharks about two meters long; they were of the species designated by the name of *squalus cinereus*. This shark does not quit the bottom of the sea; we never saw it make its appearance on the surface of the water during the whole time of our stay at Cape Diemen. It does not appear to be dangerous to man: our sailors bathed often, and no accident happened to them. This fish finds in such abundance wherewithal to satiate his voracity, that he does not attack men; otherwise the natives of this country, who dive to great depths in search of lobsters and other shell-fish, on which they subsist, would be incessantly exposed to be devoured by these animals.

Some mountains, the perpendicular height of which seemed to be at least a kilometer, were seen at the distance of three myriameters to the north. Their summits were covered with large trees, whose verdure still added to the beauty of the grand prospect which they afforded us.

An officer from our ship having been in the morning to sound towards the head of the harbour, and having gone on shore, had found a few

few huts, and near them some remains of broiled shell-fish, which had evidently served for a meal to some natives of the country.

As it was almost calm, we weighed anchor a few hours before daylight on the 23d, in order to warp ahead. The calm still continuing, it was more expeditious to tow the ship ; and the boats soon brought us into the harbour. A rock situated in the middle of the channel, was left on the larboard hand, and we ranged very close along it ; the depth of water there had been from a quarter less three to three fathoms and a half ; from four fathoms and a half to five and a half had been found in the other parts of the same channel.

We let go the anchor about eight o'clock, in three fathoms water, after having proceeded near three quarters of a kilometer up the harbour, to which was given the name of *Port D'Entre-casteaux*. The nearest shore lay to the eastward of us, at the distance of a demi-kilometer.

It is difficult to express the sensation we felt at the aspect of this solitary haven, situated at the extremity of the globe, where we at length found a secure shelter, after having been so long buffeted by impetuous winds.

The same boats went to tow the *Espérance*. About one o'clock in the afternoon she anchored

to the southward of the Recherche, at about three hectometers distance.

An attempt was made to approach the shore without having previously taken exact soundings; but we soon got aground on the mud, and we were obliged to heave quickly at the capstern, in order to bring the ship off again.

CHAPTER V.

Stay at Port D'Entrecasteaux.—Indications of its shores, being frequented by savages.—Various excursions to the interior of the country.—Trees of a prodigious height.—Goodness of the soil.—Black swans.—Large trunks of trees, excavated by fire, serve as a retreat to the natives.—Kangouroo.—Different anatomical observations compared.—Tracks of wild beasts at Cape Diemen.—Sheds erected by the natives.—Frame of their huts.—A violent squall breaks our mooring-chain.—We get aground on the mud.—We meet with a young savage.—We discover a strait, by which a vessel may pass from Storm Bay to Adventure Bay.—Huts of the savages.—Seal called *phoca monachus*.—The heart of this amphibious animal has no foramen ovale.—Other various points of comparative anatomy.—Signs of wild beasts at Cape Diemen.—Huts which appeared to us to have been recently inhabited.—Trees fit for ship-building.—Viviparous fly, the larvæ of which soon occasioned flesh to putrefy.—Broiled human bones found by Citizen Riche.—The Sail-maker of the *Recherche* loses himself in the woods.—The two ships get aground on the mud.—Some utensils of the savages.—Situation of the observatory.—

Variation of the magnetic needle.—The time of high water in the harbour on the days of the new and full moon.—We leave Port D'Entrecasteaux in order to pass through the strait of the same name.—Several fires.—Natives seen on the beach.—One of them sets fire to the bushes in several places.—We anchor in a very extensive bay, at the entrance of D'Entrecasteaux's Strait.—Excursion to the neighbouring country.—Natives surprised close by the little fires where they were preparing their food.—The strait discovered by our boats, called D'Entrecasteaux's Strait.—We anchor in different parts of the channel.—Excursions into the country situated along its shores.—A few natives cross it in a catamaran.—Various meetings with the savages.—Departure from D'Entrecasteaux's Strait.

PORT D'ENTRECASTEAUX, which is situated at the head of Storm Bay, is a basin of a nearly oval form, which extends about a demi-myriameter towards the north-north-east, and the greatest breadth of which is about a kilometer and a half. The large forests by which we were surrounded on all sides, and the mountains at no great distance, which sheltered more than half of the circumference of this harbour, added still to the security of the anchorage. The most tempestuous weather did not prevent our boats

boats from crossing it without fear. A muddy bottom, of about three fathoms and a half, exempts a vessel from damage in case she happens to get aground. Upwards of a hundred ships of the line might here anchor in safety, and would find as much wood and water as they might want.

Towards the north-north-east, at the head of this harbour, is the mouth of a small river, which one of our boats could not ascend far, from its being obstructed by large trees lying across: we saw here a few wild ducks.

Some sheds, slightly built of the bark of trees, standing along its banks, announced to us that they were frequented by the natives. We found here a quantity of the sea-weed known to naturalists under the denomination of *fucus palmatus*, cut nearly in the form of a bag used for counters at play. It was a water-vessel, and, when found, it was yet full.

It is principally on the west side of the harbour that ships can procure water with the greatest facility. We took in ours to the west-south-west. Our wood was cut on the opposite shore.

A fire lighted towards the south, at the distance of a myriameter, apprised us that there were savages living not far from us, although we had never seen any of them.

I went

I went on shore in the afternoon with the gardener and two of our people, in order to penetrate towards the north-east. We were struck with admiration at the sight of these ancient forests which the hatchet had not hitherto touched. The eye was astonished at the prodigious height of the trees; some of the family of the *myrti* were upwards of a demi-hectometer (more than one hundred and fifty feet) high: their bushy tops were crowned with a foliage of perpetual verdure; several of them falling, from age, found a support on their neighbours, and fell to the ground only in proportion as they rotted. The most vigorous vegetation forms an admirable contrast with this state of decay; and here is seen, in all its grandeur, the striking picture of Nature, who, lest to herself, destroys only to renovate.

The trees of this forest were not, however, so thick as to prevent our entering it. We walked a long time over a soil where the waters, being occasionally obstructed in their course, had formed marshes: we visited their banks, and we found, farther on, some small rivulets of very good water. Almost every where was seen an excellent vegetable mould, often upwards of four decimeters in depth; it lies on a reddish and sometimes a gray free-stone.

We

We here and there met with an argillaceous earth, which, imbibing water with the greatest facility, forms quagmires: besides, this clay, carried away by the waters that filtrate through the lands, has left little cavities, and sometimes large pools, the surface of which being covered with plants conceals the danger. One moment's inadvertence would occasion a person to fall in; and indeed this happened a few days after to the Surgeon of the *Esperance*. Being out a shooting, he thought that he was setting his foot on solid ground, and he sunk into a very deep pond. He disappeared in an instant; but fortunately he could swim.

We found in the woods some skeletons of huts. Small branches of trees were disposed to receive the bark with which the natives cover these cabins.

This excursion procured us various species of *eucalyptus*, among which was that designated by White under the name of *eucalyptus resinifera*. It is a very large tree, the fungous bark of which is easily detached, and is often near a decimeter in thickness. It produces a resinous gum of a reddish colour, which is astringent, and may be used in medicine. We also gathered several specimens of *philadelphus*, a new species of *epacris*, and the *Banksia integrifolia*, &c.

On

On the skirts of the shore we met Citizen Riche's servant, highly pleased with having killed a few birds which he was carrying to his master. This servant, recovering from indisposition, was still under the care of the Surgeon of the *Espérance*, who thought that he had a right to the game killed by his patient; but neither the threats of being purged, nor eyen those of being put on a low diet, could extort from him a single bird. And indeed the Doctor kept his word; he obliged him to submit to a regimen, and to swallow a purgative. This poor fellow learnt, by sad experience, the danger of resisting the surgeon of a ship. From that day, whenever he went a shooting, he no sooner saw M. Jouanet, however far distant, than he ran off as fast as his legs could carry him.

We proceeded for some time towards the north-east, and before dark we reached the shore the nearest to our ships, to which we expected to be conveyed immediately, as we had been promised to have a boat sent for us as soon as we haled. We might have been put on board in five minutes, but we were obliged to wait with patience for two hours on the beach. It would have been proper to have a boat solely destined for the use of the naturalists.

One of our party shot, on the lake, a bird very astonishing for the singularity of its plu-

mago

image; it was a new species of swan, a little larger than ours. It had the same fine shape; its colour, of a shining black, was as remarkable as the white colour of our swan; it had only six large white feathers in each wing; a character which I have constantly remarked in several others that were killed afterwards. The bill at the upper mandible is of a red colour, with a transversal whitish stripe towards the extremity. On the base of the male's bill is to be observed a swelling, forming two protuberances hardly perceptible in that of the female. The lower mandible is red on the edges and whitish underneath. The feet are of a dark gray. (See Plate IX.)

On the 24th, it was ten o'clock in the morning before I could describe and prepare the specimens which I had collected the day before. I then went to visit the country situated to the eastward of our anchorage.

After having gone several times into the woods a kilometer at most from the sea-shore, I was obliged to return towards the beach, it was so difficult to penetrate into these forests. Not only did the underwood prevent my entrance, but the passes were often barred by large trees fallen to the ground. The direction from south-west to north-east, which they have generally taken in their fall, proves that they had been blown

blown down by the violent south-east winds. These trees, the roots of which are nearly horizontal, take little hold of the soil; sometimes they occupy in their fall a large extent of ground, which at a distance exhibits all the appearances of a wall raised by the hand of man.

The finest trees in this country are species of *eucalyptus*; their ordinary thickness is six meters; I measured several of them that were not less than eight meters and a half in circumference. The spungy bark of the *eucalyptus resinifera*, become slippery from the humidity that constantly prevails in these thick forests, still augmented the difficulty of penetrating into them. This bark is detached with the greatest ease in pieces extremely pliant, which the natives make use of to cover their cabins; there are strips, often four decimeters in breadth, which fall off of themselves from the lower part of the trunk; it is not difficult to pull off pieces of eight or ten meters in length.

Most of the large trees, near the sea, have been excavated by fire towards their root. These apertures, which are for the most part situated to the north-east, form a shelter against the south-west wind, which appears to be the most prevailing and the most impetuous. There can be no doubt but they are the work of man; for had they been set on fire by accident, as by the combustion

combustion of shrubs growing in the shade of these forests, the tree would have suffered in every part of its circumference. These excavations in trees serve as a place of shelter to the natives, who come hither to make their meals: we found here remains of lobsters and other shell-fish which they had been eating: we saw also, in several of them, the ashes of small fires which they had kindled to dress their food. The savages are not in the greatest safety under these large trees, partly undermined by fire; a strong wind may blow them down; nor do they lie within them too much at their ease, for the ground is often very unequal, and we perceived no means taken for diminishing its hardness. Anderson speaks of fire-places of clay made in these trees by the natives. The clay which I saw there did not appear to me to be fashioned by the hand of man; it is sometimes to be found naturally attached between the boughs at a greater or less height. Besides, the savages, as we shall see in the sequel, do not construct fire-places; they make their fire simply on the ground, and it is on the coals that they dress their victuals.

Some of the thickest trees, excavated by fire throughout their whole length, formed a sort of chimney; yet they did not the less continue to vegetate.

Several

Several large trees which we felled during our stay, were, notwithstanding their very healthy appearance, discovered to be rotten in the heart.

After having followed the sea-shore, which extends to the south-east, forming various sinuosities, we wished to penetrate across some marshes, and get to the places made solid by the roots of plants; but a new species of *sclerya*, two or three meters in height, the leaves of which cut our hands and face, prevented us from proceeding farther.

In this excursion I killed some birds of the *motacilla* genus, and different parrots, among which I remarked the New Caledonia parrot, described by Latham.

We returned towards the entrance of the harbour, where our people had just been erecting the tents of the observatory; we were certain to find there a boat to carry us on board.

The astronomers waited near eight hours and a quarter to observe Jupiter's first satellites; but notwithstanding their diligence they were not in proper time, and the observation could not be made. Bonvouloir, one of the officers of our ship, who had long before made the preliminary calculations, was so affected at this disappointment, that he could not refrain from shedding tears.

One of our sportsmen found a young kangaroo on the sea-shore. This animal, after having run a hundred meters on the sand, leaped into the water, and was killed. It is to be observed, that in its course it made very good use of all its four legs, resting upon its fore feet, which, as well as the hind ones, are without hair underneath; although, from the manner in which this animal has been represented, it seems not calculated to employ, in running, any but its hind legs. As it comes out of its burrow much more by night than by day, nature has provided it with a membrane, known to zoologists under the denomination of *membrana nictitans*, situated at the interior angle of the eye, and extending at pleasure over the whole ball. Its stomach, which was filled with herbs, was divided by three large and very distinct partitions. This character would appear to assimilate it to ruminating quadrupeds. It had the testicles on the outside. These animals find probably some food on the sea-shore, for the marks of their feet are frequently to be seen on the sands.

On the 25th of April, after having delivered to the painter a few plants to have them drawn, I walked towards the south-east, following the windings of the beach: large pebbles, very slippery and heaped together on its borders, rendered the road very difficult.

We soon found, at the entrance of the wood, a shed, erected by the natives, in order to shelter them from the sea breezes; it was constructed of strips of the bark of the *eucalyptus resinifera*, interwoven in stakes fixed perpendicularly in the ground, and disposed so as to form an arch of the third of the circumference of a circle, being three meters in length by one meter in height. Its convex side was turned towards the sea: a small spot of a circular form covered with ashes, and close by it the remains of shell-fish, indicated the place where the inhabitants had prepared their meal. This sort of skreen is very useful to prevent their fires from being extinguished, when the sea breezes blow with violence.

After having crossed a tongue of land, we proceeded with difficulty in the midst of the moving sands of a vast beach, the skirts of which the sea had just overflowed.

We found at the entrance of the wood another shed, of the same shape and height as the former, but it was twice as long: we saw in it some fragments of water-vessels. They were pieces of the *fucus palmatus*, which had been damaged, and could be of no farther use to the inhabitants.

We were now on the banks of a lake which communicates with the sea at high water. This lake

lake is not above a kilometer and a half long, by a demi-kilometer at its greatest breadth.

On our return, by a more direct path through the wood, we perceived some skeletons of cabins. Branches fixed in the ground by the two ends were supported one upon the other, to form hemispherical huts, of a meter and a half in height: the leaves of a particular sort of grass were used as fastenings, and held together this frame, which was then almost far enough advanced to receive the covering of bark that renders these cabins impervious to rain.

It appeared that the human species is here very scarce or very shy. Although a great number of persons belonging to the two ships had sauntered to a considerable distance, they had not met with a single inhabitant:

There prevail at Cape Diemen, on account of its high latitude, impetuous winds, which come down in flurries from the summit of the mountains. For fear of exposing our cables to be rotted in the muddy bottom where we lay at anchor, it had been resolved to take them in, and to ride by our chain. A violent squall from the north-west carried us adrift, and we went ashore on the east coast, working ourselves into the mud. After having got in the short piece of cable made fast to the chain, we were greatly astonished to see that one of the links was broken. No flaw

was observed in the iron; but it appeared that a brittle sort of iron had been employed in the fabrication of the chain. It was fortunate for us that we made the trial of it in a harbour, where we ran no other risk than that of getting into the mud; otherwise this chain, on which we built our safety, might have occasioned the loss of the ship.

On the 26th I was obliged to stay on board all day, in order to prepare and describe the numerous specimens of natural history which I had before collected.

Next morning at day-break we set out, with an intention of going to as great a distance as we could. We landed to the south-east. After having skirted along the shore, a path, frequented by the natives, enabled us to cross the forest that lay to the south. We at length reached a fine sandy beach, which extends near two kilometers in the same direction.

A charming species of *erigeron*, the woody stem of which was covered with very small fleshy leaves, grew in these arid regions. Although the wind was very faint, the sea broke with violence, and overflowed a great extent of beach: of three successive waves we observed very regularly one, which, after having risen much higher than the others, spread much farther, and obliged us to keep at a greater distance from the sea-side.

On

On a little hillock which projects towards the sea, I procured the pretty species of *banksia* which Gærther designates under the name of *banksia gibbosa*.

We were proceeding across the forest not far from the sea, when one of our party saw a young native, who fled terrified at a shot fired at a bird. Having soon been apprised of this meeting, each of us ran to the spot, with an intention of enjoying an interview with the inhabitants of this country; but our researches were to no purpose; the young savage had disappeared, darting precipitately into the closest thickets, at the risk of tearing his skin, for he wore no clothes. We found at the place from which he had run away, a shed to keep off the sea breeze. Hard by a spring, whence issued very clear water, I found some *vertebræ*, the body of which was seven centimeters thick, and a pretty large *os frontis*, which I judged to have belonged to some amphibious animal.

The hope of meeting with the savages made us determine to continue to advance into the woods, and there pass the night. We walked for an hour towards the south-east, opening to ourselves a difficult road, till we arrived at a large plain, which extends to the sea-shore. Here grew a fine species of *mimosa*, with long single leaves of an oval form, the nerves of which are 13 salient

salient and longitudinal. This tree bears semi-circular pods, and its height is commonly from eight to ten meters.

Night obliged us to seek a shelter. We could not take advantage of the retreats which were afforded by the large trunks of trees excavated by the natives: we were at too great a distance from them, and it was necessary to have recourse to a pole-axe, with which one of us had had the precaution to provide himself. Some branches cut on the spot served to erect a hut on a piece of ground, the hardness of which was diminished by a bed of fern, of a species which differed little from the *polypodium dichotomum*.

Standing on the skirts of the shore, our view extended as far, and we perceived nothing that indicated the presence of natives. We kindled a fire, the cold being very intense.

The state of our provisions did not dispel all apprehension respecting our means of subsistence; for before we had quitted the ship we had taken only one day's provisions; but the sailors who accompanied us, being accustomed never to travel without biscuit, had still some left. With this supply we had the greatest need of water, which it was necessary to fetch at two kilometers distance. It required a good appetite to be satisfied with such a supper.

There being seven of us, we had not much to fear

fear from the natives. However, we arranged matters so that each of us should keep watch in his turn, in order to be apprised of their motions, in case any of them should pay us a visit.

The cold obliged us to abandon our hut, and go and sleep near the fire.

On the 28th, as soon as day appeared, we went a shooting, to provide ourselves a breakfast: two of us in a very short time brought in a crow and an oyster-catcher. These birds were immediately broiled and eaten, as if they had been a choice dish.

It had been necessary the preceding evening to reduce ourselves to a very moderate allowance, in order to have something to live on next day; but we discovered, when too late, that our provisions had been confided to unsafe hands: for we found only four biscuits out of six, of which our stock had consisted. A greater breach of trust would have obliged us to return on board immediately, and we should have had the mortification of being deprived of the advantage of extending our researches farther.

We were not long in reaching the banks of a large lake, which communicates with the sea, by an opening of about forty meters in width. Our endeavours to ford it were fruitless; it being too deep towards the middle.

Among

Among the great number of plants which grew in the neighbouring woods, we found the *schefflera repens*, and several species of a new genus of the family of the *pediculaires*, and nearly allied to the *polygala*. Among the shrubs which adorned these lands, lying towards the sea, we remarked a fine species of the single-leaved *mimosa*, the legume of which was shaped in the form of an S.

We saw with a wishful eye, a numerous flock of black swans, which swam away from us. I remarked to the south-east, towards the shore opposite to the lake, some islets covered with shrubs. We shot various species of snipes, when we advanced to the south-east, in order to reach the extremity the farthest from the sea. The bottom of the lake is so even, that we scarcely found the difference of a demi-meter of water in the space of upwards of a hectometer. It is covered with a prodigious quantity of shells, partly destroyed by the hand of time.

We found on its banks the *crithmum marinum*, and at a short distance from them a new species of parsley, which I denominated *apium prostratum*, on account of the disposition of its stem, which is always prostrate on the ground. Its analogy with the known species of the same genus made me consider it as a good article of food, and

my

my hopes were not deceived. We carried on board an ample stock of it, which was received with joy by navigators who felt the necessity of counteracting, by the use of vegetables, the bad effects of the salt provisions, on which we had lived in the passage from the Cape of Good Hope to Cape Diemen. A rivulet, situated to the westward of the lake, there carried its limpid waters, in which we soaked the little biscuit we had remaining.

It was not easy, after so long a walk, to return to our ships, passing through forests which we had not before visited. It would have been dangerous to lose our way, as we had but a small stock of provisions. The sun, which was now well advanced in its course, served to direct us.

At first we easily proceeded along a fine plain, where were growing several shrubs of the family of the *ericæ*, and of the *loti*.

Very thick underwood then impeded our progress. The inequalities of the ground occasionally obstructed the course of the waters: we were often obliged to cross marshes; but the numerous plants with which they were covered made us forget the difficulties that occurred in the road. Among the plants which I collected, were two new species of *rosa solis*; one of them, which I call *drosera bifurca*, is remarkable for the singular form of its leaves; these consist of two long points, situated

situated at the extremity of each petal, which proceeds from the root of the plant.

It was no small effort, after two days hard walking, to reach the harbour where our ships were lying. We arrived at its northern extremity, whence we saw the vessels at a great distance. The difficulty of the road had made us give up every hope of getting so far that evening, when fortunately we found a boat which carried us on board.

Crétin, one of the officers of our ship, had been sent by the Admiral along with the geographical engineer, in the launch, to reconnoitre Storm Bay. On their return, they related that, after having proceeded several myriameters into a channel which we had left on the starboard hand when we entered the bay, every thing concurred to justify the opinion that this was a strait. The different places where they sounded had afforded throughout very good anchorage.

I did not go far from the ship the two following days. My mornings were employed in describing and preparing the abundant collection which I had made in my last excursion.

The environs which I visited in the afternoon procured me various plants of the family of the *orchis*. Some of these I put into the hands of the painter to be drawn.

Our

Our people went out regularly every evening with the seine, and brought back a great quantity of fish. The meals which we got on board, formed a very striking contrast with those we had been obliged to make on shore.

It may not be improper to mention, that although the naturalists asserted their right to take with them in their excursions the fresh provisions to which they were entitled, they could not obtain the smallest portion of them; some biscuit, cheese, brandy, and occasionally salt pork, still continued to be our whole allowance. The reasons which we alleged were sufficient to establish our claim; but we were nevertheless supplied in the same manner during all the voyage. I should have abstained from mentioning this fact, were it not that it may be of some use to naturalists who embark on similar expeditions.

On the 1st of May I went to the westward, to the other side of the harbour. The shallowness of the bottom kept the boat at a considerable distance from the beach, so that I was obliged to get into the water to reach the shore.

I followed the coast to the northward, occasionally going into the woods. As it was low water, it was easy to keep along the skirts of the beach. Some hollows made in the sand in the shape of a funnel, concealed each a small globular crab, which had made this hole; and as soon

soon as the water had retired, it regained its habitual abode. It appeared to me, that these holes, of which those of our lion-ants will give a just idea, served them also as a snare to entrap their prey.

I was agreeably surprised with the singular form of a new genus of mushroom, which grew from the middle of the mosses with which the ground was covered. The disposition of its rays made me name it *aferoe*.

Its root consists of small filaments attached to a fungous tubercle, on which rests a volva, globular, whitish, and gelatinous, marked with seven *striæ*, without and within.

From the middle of this volva, issues a reddish peduncle (*stipes*), nearly cylindrical, hollow throughout its whole length, and open at its upper extremity, which is expanded, of a beautiful red colour, and divided into six bifurcated rays, yellowish at their extremity.

This mushroom is smooth in every part.

This new genus ought to be classed next to the *phallus* genus of Linnæus.

Explanation of the Figures of Plate XII.

Fig. 1. The mushroom seen of its natural size.

Fig. 2. The volva cleft in two, in order to exhibit its inside.

Fig.

Fig. 3. The peduncle (*stipes*), open throughout its whole length.

Some mountains situated to the westward, and of gradual declivity, formed a beautiful valley, where their waters, after having collected in a great number of little rivulets, went and discharged themselves into the harbour. The remains of the large decayed trees, with which the ground was covered, had given to these waters a slight brown tint.

The woods became less thick, and we soon perceived a vast glade, extending upwards of two kilometers towards the west. The shrubs growing very close, and the bottoms being occupied by marshes, rendered the access to it difficult: we not only ran the risk of sinking into the mud, but we were frequently stopped by a new species of *scleria*, which I call *scleria grandis*, because it grows sometimes to the height of four meters; its leaves are as sharp as a piece of glass: its oval and reddish seeds contain a small oily kernel, of which the parakeets are extremely fond, notwithstanding the great hardness of its shell.

The shrub the most diffused in these bottoms, was a new species of *embothrium*, remarkable for the toughness of its foliage. Each leaf presents an oval form, and is a decimeter long by three centimeters broad.

We followed a difficult road, in the intention of repairing towards the place where water was procured for the ships. The night overtook us half-way; and, to complete our misfortunes, a very impetuous westerly wind brought so heavy a fall of rain, that we were obliged, like the savages of New Holland, to seek a shelter in the trunks of trees which they had excavated. It was to be apprehended, that such bad weather would render useless the signals which we made for a boat to be sent to us. We were preparing to pass a very bad night in the midst of these forests, when we heard the voice of some sailors, who were come to look for us, in order to take us on board.

After several attempts, we had at length succeeded in weighing the anchor to which was made fast the chain that had broken on the 25th of April. The drag had been employed in vain, for the chain was sunk too deep in the mud. Besides, the ground was so good for holding, that the two launches together had constantly filled with water in purchasing on the buoy-rope. The anchor was at so great a depth in the mud, that the divers had never been able to discover its bill; it had been found necessary to have recourse to the capstern. From that time we felt the necessity of doubling the buoy-rope, and of weighing the anchors occasionally, in order to prevent them from burying themselves too deep.

Two boats had a second time been dispatched, to reconnoitre the north-east part of Storm Bay, as far as Tasman's Head; they returned at the end of four days: the result of their discoveries appeared to be, that Tasman's Head and Adventure Bay made a part of an island separated from Van Diemen's Land. After having gone up the channel as far as the latitude of $43^{\circ} 17'$ south, the want of provisions had prevented them from proceeding farther.

On the 2d of May, the business I had to do on board permitted me not to stray far from the ship.

The next day, the 3d, we traversed a glade situated to the north-east, which led us towards the great lake. In a preceding excursion we had seen the south part of it; but it was necessary to visit its northern side, the diversified sites of which had made us expect an abundant harvest; and our hopes were not disappointed. Its banks were frequently steep and of difficult access; the water came in a great many places to the foot of these dikes. Various species of single-leaved *mimosa* were growing under the shade of the large trees.

It appeared to us that the natives came from time to time to take up their abode on the banks of this lake, the shell-fish of which afforded them an abundance of food. We had not gone far before we saw a hut, which they had constructed

a few yards from the water-side; it exhibited nearly the form of a demi-oval, fifteen meters in height by sixteen in breadth at its base. Some stakes driven into the ground at both ends, and bent into a semicircle, supported each other so as to form a pretty solid frame, which was covered with bark.

Among the numerous articles which we collected, I was struck with the beauty of the flowers of a new species of *aletris*; they were remarkable for their colour, which was a bright red.

The season being now far advanced, was unfavourable to the multiplication of insects: accordingly they were very scarce.

Having still a few hours daylight, we advanced towards the south, in order to get to the anchorage; but it was quite dark when we reached a sandy beach, which served us as a landmark. We were at a great distance from our ships, and it was half past nine o'clock before we arrived at the tents of the observatory, where we found no difficulty in getting on board.

I did not go far the two following days, the 4th and 5th, because I had to stuff the skin of several birds, and to describe the articles which I had collected.

The too confined space of the ship laid me under the necessity of having dried in the oven

the paper which served for the preservation of the plants.

My cabin being already full, I had no other place than the great cabin to deposit part of the specimens of the vegetables, before they were completely dried. Dauribeau, who did the duty of first lieutenant, was of opinion, that articles of natural history ought not to encumber this place, and ordered my two presses to be turned out with the plants which they contained. I was obliged to have recourse to the commander in chief, who condemned this act of authority, and gave orders for the presses to be brought back to the place from which they had been removed.

At low water we found on the sea-shore a great variety of *neritæ* and whelks; and in this harbour we had the advantage of procuring very good oysters.

The east shore afforded *pyritæ* of a very diversified crystallization. In the same place were seen pieces of *silex*, the collected strata of which exhibited the appearance of petrified wood.

One of our carpenters had killed a seal of the species designated under the denomination of *phoca monachus*. It was twenty-four decimeters long; its posterior extremities are entirely destitute of claws; they are formed by two appendages,

dixes, each margin of which is nearly of the same length.

Physiologists have in a very ingenious manner explained, how amphibious animals were able to remain so long under water, by means of the *foramen ovale*; but having examined with the greatest attention the heart of this seal, I saw in it no *foramen ovale*. It is probably the same with a number of other amphibious animals. These inquiries will perhaps one day lead to a discovery of the cause on which depends the astonishing faculty that these animals possess of living alike under water or in the air.

Each lung is in a manner divided in two, by a transversal fissure.

The stomach, which in shape nearly approaches that of the hog, was filled with a great quantity of calcareous sand, in which were seen shells of cuttle-fish, and a few shell-fish, still quite entire. The first labour of digestion seemed to be to destroy the shell of these fish, whence results a sand, which appears not to follow the passage of the intestinal canal. These amphibious animals probably vomit it forth the same as several reptiles bring up again the bones of the animals on which they live. This sand is, perhaps, a sort of ballast, which affords them the means of keeping at the bottom of the sea, at very great depths.

The

The food on which they subsist being very easy to seize upon, nature has given them a mouth by no means wide.

The water in which they most commonly live renders necessary a great refrangibility in the humours of the eye; accordingly the vitreous humour was very thick.

These animals can admit into their eye, at pleasure, a greater or less quantity of light by means of a membrane, called *membrana nictitans*.

The different labours in which I was engaged, prevented me from pushing farther my inquiries on this subject.

The dried excrements yielded a very fine powder, of a beautiful colour of rather deep sulphur. The painter of the expedition considered it as very fit to be employed in the arts.

I had not as yet been able to procure the flowers of a new species of *eucalyptus*, remarkable for its fruit, which nearly resembles a coat-button.

This tree, one of the most lofty in nature, some of them being a demi-hectometer in height, bears flowers only near its summit. The stem perfectly resembles that of the *eucalyptus resinifera* stripped of its fungous bark; and in other respects these two trees are nearly of the same dimensions. The trunk, which is tapered gradually for at least half of its length, is fit for ship-building, and might serve for masts and

yards, although it is not so light nor so elastic as fir. Perhaps it would be advantageous to form made-masts of it, and even to hollow out these thick trunks of trees throughout their whole length, in order to render them lighter, strengthening them with iron hoops at certain distances. It should seem that by this method would be obtained all the solidity that may be desired ; since, from the opinion of mechanics, a cylinder preserves great strength even when it is hollowed out in its middle.

We were obliged to cut down one of these trees in order to procure its flowers ; as it inclined greatly, it soon fell. The sun was then extremely bright ; the sap rose in abundance, and at the moment of its fall issued in great quantities from the middle of the lower part of the trunk.

This very beautiful tree, of the family of the *myrti*, is covered with a pretty smooth bark ; the branches are a little angulated as they rise ; they are adorned towards their extremity with alternate leaves, slightly bowed, about two decimeters long by a demi-decimeter broad.

The flowers are solitary, and grow from the axilla of the leaves.

The calyx is hemispherical, and perfectly entire, like the other species of the same genus, and it falls in the same manner when the

stamina expand. It is, like all the fruit, a little tuberculous.

There is no corolla.

The numerous stamens are attached to the margins of the receptacle.

The style is simple. There is only one stigma.

The capsule, which is open at the top, is generally quadrilocular; the cells contain several angulated seeds; it has underneath four angles, two of which are more salient than the others. Its coat-button shape has induced me to give this tree the name of *eucalyptus globulus*.

Explanation of the Figures, Plate XIII.

Fig. 1. Branch of the *eucalyptus globulus*.

Fig. 2. Flower.

Fig. 3. Fruit.

Fig. 4. Calyx.

The bark, the leaves, and the fruit, are aromatics, which might be employed for economical purposes, in lieu of those with which the Moluccas have for a long time furnished us exclusively.

I was under the necessity of employing almost the whole of the 7th in the preparation of my collections, which increased prodigiously from day to day. I could extend my researches only to a small distance from our anchoring-place. But on the 8th I set out early in the afternoon

with an intention of spending three or four days in the woods, without returning on board to sleep. I was obliged to pursue this course in order to collect the productions which grew at a great distance from our ships.

We had on board a great variety of European seeds, which it was essential to propagate at this extremity of New Holland. The degree of temperature which is there experienced made us hope that they would thrive. The gardener was occupied in preparing a small spot of ground on which they were to be sown. This garden was formed quite close to the east shore of the harbour, to the east-north-east of our anchorage.

That night we went and slept on the banks of a rivulet, situated at the western extremity of a great lake, the south bank of which we walked along the next day. We there saw a few pelicans, but could not get near enough to fire at them.

Piron, the painter of the expedition, was of the party: he took different views of these places. Some round hillocks, covered with very tall trees, which were seen in the distance, added in a peculiar degree to the beauty of the landscape.

It was necessary for us to measure back our steps, in order to proceed to the opposite bank. Piron returned on board.

I presently

I presently met with an evergreen tree, the kernel of whose fruit, like the cashew-nut, was situated in a fleshy receptacle much larger than itself: for which reason I have given to this new genus the name of *exocarpos*.

On the same stem are seen hermaphrodite flowers, with distinct males and females.

The male flowers have a calyx with five orbicular leaves; these have no corolla: the stamina, five in number, are small, and attached to the calyx between its divisions; the germen is abortive.

The female flowers have a similar calyx; they have neither corolla nor stamina; the globular germen has one short style; the stigma is in the shape of a circular shield.

The hermaphrodite flowers have the calyx, stamina, and germen, as I have just described.

The fruit is almost a round nut, somewhat black, inserted in a red fleshy receptacle, hollow in its middle, the length of which is about three times that of the nut.

The kernel is oily, and of the same shape as its shell.

The principal characters of this new genus induce me to place it among the *terebintaceæ* next to the *anacardium*.

I have named this species *exocarpos cupressiformis*.

Explanation of the Figures, Plate XIV.

Fig. 1. Bough of the *exocarpos cupressiformis*.

Fig. 2. Part of a branch loaded with flowers of the natural size.

Fig. 3. Germen, with its style and stigma.

Fig. 4. Fruit of the natural size.

Fig. 5. Fruit cut vertically. An empty space is perceptible in the middle of the fleshy peduncle.

Fig. 6. Kernel.

Fig. 7. Part of the woody substance which encloses the kernel.

The day was far spent when we arrived on the banks of a rivulet where we took up our quarters for the night. I remarked at this southern extremity of New Holland several species of *ancistrum*, analogous to those which grow at the southern extremity of America.

We were surrounded by charming groves, formed in a great measure by a pretty species of narrow-leaved *thesium*.

The cold had obliged us to kindle a large fire; some of us had scarcely begun to give way to sleep, when we heard at a few yards distance the howl of a wild beast: this howl appeared to us somewhat similar to that of a leopard. It is probable that our fire had contributed much

more

more than we had imagined to prevent this animal from coming any nearer to us.

I had a few days before found the upper jaw of a pretty large quadruped, of the carnivorous class.

As soon as the day appeared we followed the banks of the lake, quite close to which we remarked five islets covered with trees, forming an agreeable contrast with the smooth surface of this great sheet of water.

We saw, for the first time in this country, some quails, which flew to a great distance.

After a few hours walk to the north-west, we found, on a small eminence and under the shade of some very large trees, two huts, of the form of those which we had already seen elsewhere: they were in perfect repair, and it appeared to us that they had been recently inhabited.

I gathered a beautiful plant which forms a new genus, very distinct from all those which have been hitherto described. It is one of the *irides* with two stamens. I have given it, on account of this singularity, the name of *diplarrena*: its affinity to the *moræa* genus has induced me to designate it by the name of *diplarrena moræa*.

The bivalved spathe contains several flowers, which come out one after the other, when they are ready to blow. They fade still much quicker than those of the *iris* and the *moræa*; and I should

should have relinquished all hopes of having it drawn if new flowers had not succeeded those which went off, almost as soon as I had gathered the plant.

Like the other irides it has no calyx.

The corolla has six deep petals, the three interior of which are much smaller than the exterior: of these interior petals the superior one is a little shorter than the two others, and more prominent toward its base.

Having examined a great number of the flowers, I constantly found only two stamina, the filaments of which terminated in a point, bearing anthers of a white colour, marked with two grooves. I have always seen in the place of a third stamen the rudiment of a filament, not more than two millimeters long; it bears no anther, and it is situated beneath the interior and superior petal.

The germen is inferior: it has three angles, and is borne on a long peduncle.

The style, a little longer than the stamina, is cylindrical, and terminated by a stigma, which is in the shape of a shepherd's crook.

The capsule is trilocular, and contains several globular seeds, attached to a receptacle which rises from the middle of the cells to their summit.

This genus, which must naturally be placed after the *iris* and the *moræa*, has all the parts of those

those plants; like them the leaves are lanceolate, forming a sheath on the side towards their base.

Explanation of the Figures, Plate XV.

Fig. 1. The plant of the natural size.

Fig. 2. Flowers exposed to full view, the spathe having been removed. A blown flower is seen, the three exterior petals of which have been detached.

Fig. 3. Exterior petal seen internally.

Fig. 4. The same seen externally.

Fig. 5. Interior petals expanded, in order to shew the stamens and the style.

Fig. 6. Stamen magnified.

Fig. 7. Style with its stigma.

Fig. 8. Part of the germen, the stamens and the style being removed, in order to shew the rudiment of the filament found in the place of a third stamen.

Fig. 9. Inferior part of the capsule cut transversely, that the three cells may be seen.

Fig. 10. Superior part of the capsule cut vertically, in order to shew the seeds.

I was crossing a small copse when a large kangaroo quitted his burrow, at the moment that I was very near it: at first he followed for a space of upwards of thirty yards one of the little paths which these quadrupeds make through the bushes;

bushes ; he could not avoid making use of his fore feet in these narrow passages. As soon as he had reached the extremity of them, he sprang forward by leaps, topping the shrubs with so much nimbleness that he was presently out of sight.

A sheet of water, into which ran a charming rivulet, was covered with a prodigious quantity of wild ducks, that took wing quite close to us : we so little expected this agreeable sight, that we were not able to kill one of them.

A fresh breeze got up towards night, and seemed to threaten us with rain. Being at a distance from any shelter, we were obliged to sleep in the open air : a hedge, which we constructed with branches and boughs, served us as a protection from the weather, and under this shed it was easy for us to light a large fire.

On the 11th, proceeding to the westward, we traversed a vast plain, where were here and there some marshes, covered with plants, which concealed from us the danger of advancing : the water issues from the lowest parts, and in its course forms pretty rivulets.

A very big kangaroo came out within four yards of me from the middle of a copse ; my gun flashed in the pan ; and the animal went off very slowly, taking one of the paths made through the groves : these are so many covered ways which cross in every direction, and are very close to each other.

The

The multiplied tracks of these quadrúpeds announce that they must be very numerous; as they keep in the closest thickets, it would require dogs to put them up. These little paths generally terminate at some rivulet.

Our provisions being exhausted, it was necessary to return on board before night. We wandered in the woods, trying to approach the anchoring-place, when we arrived at the north-east extremity of the harbour, whence we perceived our ships at a considerable distance. It was not without much trouble that we reached them, as we were obliged to pass through places of difficult access.

The whole day of the 12th scarcely sufficed for preparing and describing what I had collected the preceding days.

I had ordered a servant, who had remained on board during my absence, to have an eye to the preservation of the articles which required daily care, and I had the satisfaction to find them in good condition.

Citizen Riche discovered some human bones in the ashes of a fire kindled by the savages. By their hollow shape, he recognised them to be the *ossea innominata* of a young girl; they were partly covered with pieces of broiled flesh. I will not do these people the injury to rank them with cannibals; I presume that they are in the habit

habit of burning their dead. These were the only human bones that were seen during our stay at this anchorage.

On the 13th I went to the spot where we took in our water. It was furnished by a small rivulet that emptied itself on the sea-shore, after having flowed across the ruins of the large trees with which this country is covered. Their decomposition had coloured this water with a brown tint. It was necessary to roll the casks about a hectometer, for the shoalness of the bottom obliged the launch to be kept at this distance from the beach.

We here saw the carpenters employed in raising the gunnel of our launch, she having lately overset in the harbour, when under sail. The people who were in her had been forced to swim till assistance was sent to them. The first lieutenant had had her fitted with masts too taunt, and sails much too square. It was easy to rectify these bad proportions.

The wood that was employed was the new species of *eucalyptus*, which I have named *eucalyptus globulus*. Our carpenters judged it very fit for ship-building.

A constant humidity reigned in the middle of these thick forests, into which I penetrated towards the south-west. In this spot grew, in the fullest vigour, a great many mosses and ferns.

I here

I here killed the beautiful species of *merops*, indicated by White under the denomination of *wattled bee-eater*, of which he has given a good drawing. This bird is remarkable for two large appendages or wattles on each side of the head.

It was necessary to prepare expeditiously the skin of the birds which I wished to preserve; for the flesh, when exposed to the air, was very soon covered with small living *larvæ*, which were deposited there by flies of a fawn colour; they are viviparous, like those known by the name of *musca carnaria*. These *larvæ* particularly accelerated the putrefaction of flesh.

As we were to sail the next day, the 14th, I endeavoured to turn to account these last moments, and landed on the eastern shore of the coast nearest to the ship.

I accompanied the gardener to the ground where he had sown different European seeds. This spot, which was very well dug for an extent of nine meters by seven, had been divided into four patches; it afforded a soil in which clay was too predominant to ensure the success of the seeds that had just been committed to it.

After we had penetrated into the woods, a quadruped, of the size of a large dog, came out of a bush quite close to one of our shipmates. This animal, which was of a white colour spotted with black, had the appearance of a wild beast.

beast. There is no doubt that these countries will, on a future day, add several species to the catalogue of the zoologist. A vértebra that we found inland, the body of which was upwards of eleven centimeters in thickness, induces me to think that some very large quadrupeds will there be met with.

A heavy shower of rain overtook us about the middle of the day, and forced us to stop. The large trunk of a hollow tree, which served us as a shelter, was upwards of eight meters in circumference. We thought that we might light a fire in it, in the manner of the New Hollanders; but the smoke soon drove us from this retreat.

We tried to penetrate into the places which we had not yet visited. A glade seemed likely to conduct us to the plain that lay to the north-east. We had not at most three hours daylight left. A sudden declivity made us slacken our pace: some large trees, heaped one upon the other, obstructed the way; and shrubs, to which the moisture of these forests gave the greatest vigour, increased the difficulties of our progress. Among these shrubs grew a beautiful species of arboreous *polypodium*, the trunk of which was upwards of four meters in height*.

* It may well be supposed, that I shall not fatigue the reader with a long nomenclature of the productions which I met with in this voyage; that will be the object of a separate work.

We

On the approach of night we discovered that we were on the banks of the small lake, at its most inland extremity. The woods prevented us from following all its margin without wetting our feet. The water which we were obliged to cross, was fortunately not deep. The obscurity of the night did not prevent me from gathering a new species of *restio*, which I met with for the first time.

This lake, although it communicates with the sea, contains no fish; the *Espérance*'s people had come here and hauled the seine, but had caught nothing.

Having reached the sea-side, we had still a great way to go, and some thick clouds redoubled the darkness. We had often to climb over large blocks of stone, against which the waves broke with violence. We went groping on in the dark, at the risk of falling headlong into the sea, and we had infinite difficulty to keep our feet on stones washed by the waters, and covered with *fucus* and other marine productions, which rendered them extremely slippery.

A great number of phosphoric molecules, of different sizes, brought by the waters of the sea, afforded the only light that guided our steps.

At length we arrived at the spot which had been chosen for making astronomical observations. There was no longer any one here; the

astronomers had packed up their instruments, and beat their retreat.

Our sail-maker having been alone on a shooting excursion the day before, had lost himself in the woods, where he had been compelled to pass the night. Several guns had been fired from the ship to let him know the place where the ship lay; at last he had returned on board in the afternoon, exhausted by hunger and fatigue. Having taken with him no provisions, he had been a day and a half without eating. He related that, in the middle of the night, different quadrupeds had come and smelt him at a few centimeters distance. Many of the people on board believed him: but we, who had passed several nights in the thickest part of the woods without meeting with such familiar animals, were not so easy to be persuaded: very far from thinking that he wished to impose on us, we saw, in this account, the effect of the imagination of a man deprived of food, and bewildered alone in the midst of immense forests.

We had weighed the bower anchor by which we rode, and let go the stream, in order to get under way more easily: the *Esperance* had done the same. During the night of the 14th some very heavy squalls from the north-west made both ships drive; they went on shore on the mud, where they experienced no damage, and

they were easily got off again. It was surprising that it should have been thought that we were in safety, when riding by a small anchor recently dropped in a muddy bottom: this sort of bottom is good for holding only when the anchor has reached a certain depth. It ought naturally to have been foreseen, that the stream anchor, newly let go, had not time to bury itself sufficiently for holding against so heavy squalls.

We were now waiting only for a fair wind in order to set sail. That which blew was contrary to us during the whole day of the 15th: it was boisterous the following night, and notwithstanding the ship had just been ashore, Dauribeau wished that we should ride only by a small anchor; but the Admiral felt the necessity of letting go one of the bowers.

During our stay at Cape Diemen we had seen the natives only at a considerable distance: those who had perceived us had always made off with precipitation: some had left behind them their household utensils, which gave us a poor idea of their industry; these were baskets clumsily made of the species of sea-rush known by the name of *juncus acutus*; they had likewise very frequently left their water-vessels, which they make of a large piece of *fucus palmatus*, cut circularly, and gathered in like a bag used for

holding counters at play. We never found any arms in the places which they had recently quitted; no doubt they carried them away, or concealed them carefully, for fear that we might make use of them to their annoyance.

A few straggling huts indicated a very scanty population; some shell-fish, collected in small heaps at a short distance from the beach, left us no doubt that the sea-shores furnished principally the food of these savages.

As we found only once some human bones, which even were partly burnt, it appears that they leave not their dead exposed in the open air. It is difficult to know if they are in the constant practice of burning them; perhaps they also inter them, or throw them into the sea.

The multiplicity of paths, in which were discovered the tracks of different quadrupeds, evince that they are here very numerous; doubtless they keep during the day in the inaccessible haunts of these thick forests.

A great number of small rivulets discharged themselves into the harbour. The ground was so moist internally, that as soon as it was dug to a little depth, the water almost immediately filled the cavity.

Hooks and lines and the seine generally procured us fish in abundance; a still far greater quantity

quantity was caught when east and south-east winds brought the fish into the bay.

Van Diemen's Land was discovered by Tasman in the month of November 1642. When Captain Cook anchored here in 1777, four years after Furneaux, he thought that he was the third of the European navigators who had landed on this coast. Cook was then ignorant that Captain Marion, after having staid there some time, had left it on the 10th of March, in the year 1772. The natives observed a very different conduct with respect to these two navigators. Perhaps the mildness of disposition that they shewed towards Cook, was the effect of the idea that they had imbibed from our fire-arms, which Marion was under the necessity of using against them.

The station of our observatory, which was situated on the starboard hand towards the entrance of the harbour, was in latitude $43^{\circ} 32' 24''$ south, and longitude $144^{\circ} 46'$ east.

The variation of the compass was $7^{\circ} 39' 32''$ east.

A flat needle gave for the dip $70^{\circ} 30'$.

The tides were felt only once a day. The time of high water, on the days of the new and full moon, was from nine to eleven o'clock, the sea rising perpendicularly about two meters. The winds had great influence on the tides,

which they advanced or retarded frequently for some hours.

This harbour, on account of the smooth water that there prevails, is one of the most convenient that can possibly be desired for refitting ships. Besides, the vast forests that surround it afford a wood which our carpenters considered as very fit for ship-building: they employed some of it, which answered extremely well.

The weather, during near a month's stay, was far from being favourable to astronomical observations. To explore these coasts would be no easy task in this season of the year; and indeed, the violence of the winds would oppose great obstacles to such an undertaking.

During our stay at Cape Diemen the winds blew strong between the north-west and south-west; those from the north-west almost always brought storms and rain.

At sunrise on the 16th, the two ships were towed to the mouth of the harbour; the sails were then loosed, and, with a breeze from the northward, we stood towards the new strait, which the Admiral intended to enter.

After we had, till ten o'clock in the morning, followed the edges of the reefs which we left on the larboard hand in Storm Bay, the opening of the strait bore north-north-west, at the distance

distance of a myriameter and a half: we then hauled close on a wind.

The summits of the most lofty mountains were already whitened by the snow. These mountains make part of a chain which extends from south-east to north-west, and terminates towards the head of the harbour.

We took great pleasure in discovering from the ships the places whither we had directed our steps in our different excursions.

We saw, for a moment, a thick smoke rise in the distance to the northward of the great lake, and presently we distinguished five natives, who had just quitted a fire kindled on the sea-shore, and were walking along the beach; one of them, carrying a lighted stick, set different places in a blaze, which burned rapidly, but was almost immediately extinguished.

We made several tacks in approaching the coast, where there is no danger to be feared.

A light breeze from the northward, and a contrary tide, prevented us from entering the channel; it was dark when we let go the anchor at its mouth, in twenty-nine fathoms water, over a bottom of gray sand. The site of our observatory then bore west, distant two myriameters.

The mercury in the barometer, after it had fallen for the last twenty-four hours, stood at

27½ inches, although the weather preserved a very fine appearance. We were not free from uneasiness; for so great a variation had never, during our stay at anchor, failed to be followed by tempestuous winds. It is probable that they blew at a distance, but we felt none of their effects.

A fire, kindled by the natives, was perceived during the night.

The tide having become favourable about nine o'clock in the morning of the 17th, we weighed with a breeze at north, and plied to windward.

The proximity of the coast allowed me to remark, at the entrance of this channel, a free-stone which had every appearance of that which is met with at Port D'Entrecasteaux.

The snow had increased prodigiously, during the night, behind the summit of the high mountains.

The mercury in the barometer had fallen to 27 inches 4 $\frac{4}{5}$ lines, and the northerly wind continued to be very faint.

It was dark when we entered the strait, to which was given the name of Admiral D'Entrecasteaux. We anchored there about seven o'clock in the evening, in twenty-two fathoms, the bottom black mud mixed with broken shells.

We

We were in latitude $43^{\circ} 20'$ south, and longitude $140^{\circ} 10'$ east.

The *Espérance*, being apprised of our anchoring-place by a fire lighted near the main-mast, was not long before she came to an anchor two kilometers to the north by west of us.

The sea, during the whole night, was very phosphoric on the smallest agitation.

Some heavy squalls, accompanied by rain, obliged us to veer away cable, and get down the top-gallant yards.

On the 18th a cloudy sky made us wait with the most lively impatience for the moment of enjoying the fine prospect of the immense bay which forms the entrance of D'Entrecasteaux's Strait. At length the horizon cleared up. On whatever side we directed our view, we beheld spacious bights, where the navigator, buffeted by storms, may come with all confidence in search of shelter. The eye surveyed with astonishment the immensity of these harbours, which would easily contain all the fleets of the maritime powers.

The point on the starboard hand at the entrance of the Strait bore south 43° west.

The wind blowing with less impetuosity about eleven o'clock in the morning, advantage was taken of this lull to dispatch the barge. The geographical engineer set off with an intention of going

going to discover if a bight seen to the north-east by north could afford a passage to our ships.

The ebb set from half a knot to a knot an hour, north-west by north, from eight o'clock in the evening till two in the morning.

The strength of the wind having prevented our sending on shore any of the small boats, we were under the necessity of remaining on board. But the next day, the 19th, we landed at the distance of a demi-myriameter to the south-west, on the island which runs the whole length of this channel. A boat belonging to the *Espérance* had passed the night at the same place, and had there caught a great quantity of fish.

It was with very lively pleasure that I visited this island, where I collected several new plants, the most numerous species of which must be classed among the genera of the *maleleuca*, the *aster*, the *epacris*, &c.

The shores of the channel afforded us an easy passage through the shrubs, which are here thinly scattered. We afterwards climbed over steep places, which rise perpendicularly a demi-hectometer above the level of the sea. At this height we remarked marine salt, carried by the spray into the cavities of a very hard free-stone, which principally forms the foundation of this land.

We had scarcely proceeded two kilometers, when

when the remains of a hut and some heaps of shell-fish let us know that this island was inhabited.

This was the first time that we saw any partridges at Cape Diemen. We sprang a very large covey, which went and settled at a great distance from us.

It was late when we met with Citizen Riche. He had spent the night with the fishermen. The offer which he made us to partake the fruits of his sport was gladly accepted ; he pointed out to us a little spring, where we enjoyed the pleasure of quenching our thirst with very good water, at the same time eating excellent fish and some shell-fish, which we broiled in the manner of the New Hollanders. This repast soon made us forsake our ship provisions.

It was not long before we learnt that the commissioned officers of the Recherche had agitated the question, Whether the naturalists should preserve any right to the supplies of fresh provisions distributed on board, while they were on shore collecting the articles which constituted the object of their mission ? Good care had been taken not to summon them to such discussions : no one espoused their cause, and the question was very quickly decided against them, contrary to every idea of justice. I must add that, notwithstanding the changes that took place among the persons

who

who acted as caterers of our mess, all of them were strict observers of so unjust a law.

It was dark when our boat came to fetch us. Riche was glad to take a passage with us, rather than remain on shore; but he was under the necessity of sleeping on board the *Recherche*, although he had the most urgent occasion to go to the *Espérance*; for it is not indifferent to a naturalist to be carried back to the place where are deposited the means of preservation of the specimens which he has recently collected.

A small island at the distance of a demi-myriameter to the south-west, had been called *l'Ile aux Perdrix*, Partridge Island, by some of our seamen who had discovered it. Citizen Riche and myself went thither on the 20th, to spend the day; and in lieu of partridges we there found a great number of quails. Is this a mistake of those who had first visited it, or had the partridges quitted the island?

This small island is in latitude $43^{\circ} 23' 30''$ south, and is about two kilometers in length. The new species of parsley which I have named *apium prostratum*, grew in abundance on its shores, almost even with high-water mark. We gathered a great quantity of it, which we took on board.

Several species of club-wood, *casuarina*, covered this country, particularly to the northward; such of those trees as were growing on the shore seemed

not to thrive the worse for the humidity communicated to them by the sea. It was obvious that their branches, by natural inclination, had spread on that side. Among the plants that I met with for the first time was a singular species of *limodorum*, of which I had a drawing made: I also gathered several ferns, and a beautiful species of *glycine*, remarkable for its flowers, which were of a bright red.

This islot afforded us no fresh water, although several forsaken huts attested that it had been inhabited by savages.

Two officers belonging to our ship (Crétin and Dauribeau) had set off at six o'clock in the morning to go and reconnoitre the coast which lay to the eastward of us; they there saw several bays, the greatest extent of which was from north-west to south-east. They also remarked various coves, which formed so many harbours: a stiff breeze impeded their progress, and prevented them from advancing very far into them. Several fires perceived at a little distance from the shore determined them to land there; and scarcely had they entered the woods before they met with four natives occupied in keeping up three small fires, near which they were fitting. These savages immediately fled, in spite of all the signs of friendship that were made to them, leaving behind the lobsters and other shell-fish which they were broiling

ing on the coals. Hard by were seen as many cabins as there were fires.

This place appeared to be pretty much frequented, for there were here found fourteen small spots marked with the traces of the fires that had been kindled on them.

One of these savages, who was very tall and extremely muscular, had forgotten a small basket filled with pieces of filex ; he was not afraid to come and look for it, and he advanced quite close to Crétin, with the air of confidence which his strength seemed to give him. These savages are not of a very deep black ; they let their beards grow, and have woolly hair. Some were quite naked, and others had a kangaroo's skin over their shoulders.

The household utensils which they abandoned consisted nearly of thirty rush baskets of the same shape as that which may be seen at the bottom of *Plate V.* : some of them were full of crabs and other shell-fish. These baskets are for the most part a third of a meter in depth. Some very small ones were found of the same shape, which were not more than a decimeter long ; they were filled with various pieces of filex, wrapped up in the bark of a tree, as soft as good agaric. The method which these savages employ to procure fire is, to strike two pieces of filex one against the other : in this they differ greatly from the other

other inhabitants of the South Sea, and even from the other savages of the east part of New Holland: a circumstance that would seem to assign to them a different origin.

They also left behind several kangaroo-skins, and some water-vessels.

The two officers prevented the sailors from touching any of the effects of these natives; they took only for the Admiral a large and a small basket, a kangaroo's skin, and a vessel made of sea-weed, which held five quarts of water. The shape of the water-vessel may be seen at the bottom of *Plate V.* by the side of the basket. The savages had no cause to regret the loss of these different articles, for the officers left on the same spot a few knives, several handkerchiefs, some biscuit, some cheese, and an earthen jug, too brittle, indeed, to be a proper substitute for the water-vessel furnished them by nature.

These savages, although little encumbered with their effects, scattered some of them from time to time along their road. I know not whether this was to accelerate their flight, or to stop the Europeans who were following them, by thus exciting their curiosity.

A boat from the *Espérance* had been to visit a cove, nearly a myriameter distant to the westward. The persons sent on this service, had met with a native, who, notwithstanding every sign of friend-

ship

ship that they expressed, would never suffer himself to be approached within the distance of at least two hectometers. A charming rivulet emptied itself near the head of the cove. The situation of this port, opposite to an island that shelters it from the sea, renders it very fit for giving to ships all the repairs of which they may stand in need.

Other bights visited by the same boat, afforded in general excellent anchorages.

A bay extended so far to the north-west, that it was not possible to discover its extremity. Some of these bights are perhaps channels, which communicate with the sea.

The attention that it was necessary to pay to the specimens which I had previously collected, employed me the whole of the 21st.

The gardener set off in the biscayan, which was loaded with ten persons, to repair to the island where I had been the day before. After having in so small a boat struggled in vain against very strong winds, blowing directly in their teeth, they had resolved to yield to their inclination, to go and look for a shelter towards the north-east, at the distance of a myriameter and a half behind a small circular island, placed at the opening of the passage which they had been to explore. This trip had well nigh been fatal to them: the mast giving way, the sail fell over-board;

board; the boat's way consequently became deadened, and, being too deeply laden, she filled by the roughness of the sea. At length they arrived, exhausted by fatigue, under the lee of the island, where they enjoyed a calm, which was the more agreeable, as they had just incurred the greatest dangers. The Admiral being extremely uneasy respecting their fate, at one o'clock in the afternoon sent a boat in search of them, knowing very well that the biscayan could not get on board against winds so contrary. We had the satisfaction of seeing them again towards night. They related to us, that after having followed the coast to the south-east and south, during an hour's walk along a pretty easy road, some fires had apprised them of the presence of the savages, and it was not long before they met with a few. These were the same that had been seen the preceding day; they did not suffer themselves to be more closely approached. In the fires, which they abandoned precipitately, were found shell-fish still broiling on the coals; and upwards of thirty kangaroo-skins, at a little distance, indicated the fondness of these inhabitants for hunting.

It appears that they had had no dislike to the bread and the water which had been deposited for them the preceding day; but the smell of the cheese had probably prevented them from tasting

it, for it was found in the state in which it had been left. In the same place were also found one of the knives, and the handkerchiefs, that had been put among their effects the day before.

A few shots fired at some birds, no doubt spread terror among these savages; for a boat from our ship went to the same spot two days after, and met with none of them.

On the 22d of May, the launch was sent to water at the head of a cove recently discovered to the westward. I availed myself of this opportunity to go and visit this place, which was near a myriameter distant from the anchorage. It forms a harbour of the breadth of three hectometers by a kilometer in depth, and there is sufficient water in it to admit large ships to anchor. A rivulet brought towards its extremity very good water, which it was not easy to procure, because, to have it in all its purity, it was necessary to roll the casks partly in the mud, to the distance of upwards of three hectometers from the boat. The people might have been spared this labour, which was prejudicial to their health, by making use of long canvas hoses, or of leather pipes, by means of which it would have been easy to convey the water into the launch. Navigators will be sensible of all the importance of this precaution, especially when the impossibility of ascending different rivers with boats, forces them

to take in brackish water; while, by means of a hose carried a few hectometers higher up, it might be procured without any mixture of sea-water, which renders it very unwholesome.

On the banks of this rivulet grew various species of *casuarina*, one of which was remarkable for its club-shaped fruit. I also saw there a rather tall shrub, which forms a new genus in the family of the *cruciferæ*.

Numerous paths beaten by the kangaroos, ran in the direction towards the rivulet, where these animals frequently come to quench their thirst.

The wind, which had been contrary to us in going towards this watering-place, should have favoured us on our return; but it fell calm, and it took us several hours to get on board.

The barge arrived after four days absence, having in that time surveyed the whole extent of the Strait, which is about four myriameters and a half long, from south-west to north-east. Not less than six fathoms and a half water had been found in it, with a bottom of mud, and sometimes of fine sand. Adventure Bay is separated from it only by a tongue of land, the breadth of which is at most four hectometers.

On the 23d, we waited only for a fair wind, to run into the Strait, in order to draw a plan of it with some degree of correctness.

The north-east and north winds were against us; besides, they were so faint, that we were obliged to remain at anchor the whole day.

During the night were seen several fires, which the natives had lighted on the south-east shore.

We got under way about half past seven o'clock the next morning, the 24th, and plied to windward, approaching within a kilometer of the land. We never found less than six fathoms and a half water, with an excellent bottom.

Although the thermometer in the coldest mornings had not fallen lower than 7° above the freezing point, the snow had considerably increased on the high mountains, which were seen to the west and north-west.

The favourable currents made us gain on each tack; they became contrary to us about six o'clock in the evening; we then cast anchor in eight fathoms water, the bottom gray sand, pretty near the coast, and to the northward of the anchorage which we had quitted in the morning.

The natives kindled upwards of twenty fires on the south shore. Several families had no doubt been attracted towards the coast, by the news of our stay in this bay.

The currents favoured us about seven o'clock in the morning on the 25th, and we made several boards

boards to enter into a narrow sleeve of the Strait, to the west shore of which we borrowed pretty close, standing to the north-east by north.

After having run about a demi-myriameter along this channel, we entered a second bay, upwards of a myriameter in extent, bordered towards the west by lands of a moderate height : those to the eastward were low, and separated this Strait from Adventure Bay.

About half past one o'clock in the afternoon we came to an anchor at the distance of a kilometer from the coast: we then set Fluted Cape bearing south 33° east.

We landed to the north west, on a coast where the very thick woods preserved the greatest humidity, although no rain had fallen for some days.

Among the shrubs which covered this shore a new species of *ptelea* was growing in great abundance.

On the 26th we weighed anchor at seven o'clock in the morning, and at noon we found ourselves in a third bay, the different bights of which left us for some time in doubt respecting the passage that it was necessary to follow in order to get out of it ; the outlet lay to the north-west in the most distant bight. The depth of water in this bay was not less than eleven fathoms towards its middle, and at the distance of two hectometers from the shore we had not less than six fathoms

and a half. This bay, in other respects, was as extensive as that which we had last left.

After having stood near two myriameters to the north-north-east, we anchored about half past three o'clock in fourteen fathoms and a half, with a muddy bottom. As we thought that a favourable wind might still carry us some distance before night, none of us went on shore.

We got under way on the 27th about seven o'clock in the morning; but the currents soon became contrary to us, and forced us to bring up again in twelve fathoms and a half, over a bottom of sand mixed with mud. We were then in latitude $43^{\circ} 4'$ south, and longitude $145^{\circ} 17'$ east.

At the distance of a demi-myriameter towards the north-east was seen the extremity of the Strait by which we were to sail out.

A fire lighted not far from the shore announced the presence of the natives, and shortly after we saw one walking along by the sea-side.

Two boats were going to carry several persons to both sides of the Strait, when we observed some savages paddling along in a catamaran, who landed on the east coast. As timid as those who had hitherto been met with, they precipitately made for the shore, in order to scamper through the woods, leaving behind a few darts of clumsy workmanship.

I landed

I landed on the beach, from which they had just disappeared, and I found there a great number of stones of a very beautiful granite, extremely hard, and rounded by attrition.

There lay on the beach four catamarans, made of the bark of trees in the form of that which may be seen *Plate XLIV. Fig. I.* Skiffs of this sort can serve only in a sea scarcely ruffled, otherwise the waves would soon knock them to pieces. As these savages know how to hollow out the trunks of trees by means of fire, in order to make of them a temporary abode, they should employ the same method to form canoes ; but they are as little advanced in navigation, as in the other arts.

I had now reached the outlet of the Strait, where I remarked some very beautiful crystals of felspar scattered here and there in several rocks of very hard sand-stone.

On the top of these hills I met with the plant which Phillip, in his Voyage to Botany Bay, has designated by the name of the *yellow gum-tree*. It was only in seed, as Phillip found it ; so that I was also deprived of the characters indispensable for determining this genus, which has the port of a *dracæna*. The seeds, placed on a long spike, were filled with a great number of larvæ, which transformed themselves into little *phalænæ* of the section of the *tineæ*.

The resinous gum which exudes from this

plant is highly astringent : there is no doubt that it would be useful in medicine ; the gummy principle with which it abounds must facilitate its mixture with our humours, and make the use of it preferred to a great many other astringents.

Among the beautiful plants that I then gathered, was a very remarkable compound flower, which has not till now been noticed by any naturalist ; it forms a new genus, which I call *richea*, from the name of Citizen Riche, one of the naturalists of the expedition. This learned man has fallen a victim to his love for the sciences, after having, in a state of consumption already far advanced, made a long and fatiguing voyage, in which he consulted his zeal more than his strength.

This new genus is naturally classed in the third section of the *cinarocephalæ* (*Juss. Gen. Plant.*).

The common calyx is composed of several obtuse leaflets, scarious at their summit, of equal length, and arranged in a single row ; it comprehends several distinct calyxes, each borne on a very short peduncle ; all these little calyxes are composed of five or six leaflets, containing five or six florets, which are all hermaphrodite, and each provided with a scale almost the whole of their length.

The florets are inflated in their upper part, and are in five equal divisions.

Five distinct filaments, attached to the tube

of

of the floret, bear as many anthers united in the form of a cylinder.

The style is filiform, and rises to the height of the stamina. The stigma is bifid.

The seeds are oval, covered with a fine down, and crowned with from twelve to fifteen *pappi*, loaded with hair.

The glaucous colour of the leaves of this compound flower has induced me to give it the name of *richea glauca*. Its flowers are of a bright yellow colour.

- *Explanation of the Figures, Plate XVI.*

Fig. 1. The plant of the natural size.

Fig. 2. The flower seen from behind, in order to distinguish the common calyx.

Fig. 3. One of the little calyxes with florets.

Fig. 4. The floret with its seed.

The whole of the natural size.

Fig. 5. The same seen through a magnifying glass.

Fig. 6. The floret of the natural size, split longitudinally, in order to shew the stamina.

Fig. 7. The same magnified.

An officer belonging to the Recherche had just followed through the woods a path made by the savages. He presently met with six, who were quite naked, and were walking slowly towards the south, armed with darts from five to six meters long. The surprise occasioned by so unexpected a meeting was depicted in their features;

but their numbers soon banishing their alarms, they approached on the invitations of this European, and immediately put on their head a cravat and handkerchief which he gave them. They however appeared frightened at the sight of a knife, the use of which the officer pointed out to them, especially when he shewed them the manner of sharpening it ; and their fear was not dispelled till he gave it them as a present. It was to no purpose that he pressed them to approach the place where we lay at anchor ; his entreaties were unavailing : the savages continued to follow the same path, which led away from our ships.

A boat had landed on the other shore near a fire, whence rose a very thick smoke. Here were found eight natives, who all had their shoulders covered with a kangaroo's skin, and were warming themselves under shelter of four sheds. These savages took to flight as soon as they perceived our people.

An old woman loaded with provisions, which she was unwilling to abandon, was very quickly overtaken by some of our sailors : she had just received a handkerchief with an air of satisfaction ; but the sight of a knife, which they wished also to give her, frightened her to such a degree that she threw herself upwards of fifteen meters from the top of a very steep acclivity, and fled over the rocks, where she almost immediately disappeared.

I know

I know not whether the persons who related the circumstance in another manner meant to amuse themselves at the expense of those who had had such a meeting: by their account the great age of this woman had been no protection to her against the attacks of these seamen; however, she had still sufficient strength to make her escape, leaving behind two baskets, in which were found a lobster, some other shell-fish, and a few fern-roots of about two centimeters in thickness: I discovered that they belonged to a new species of *pteris*, of which I had laid in an ample stock. It appears that these savages express from it by mastication the mucilaginous part, which is more or less abundant in the plants of this family.

Like the other savages, this woman had a kangaroo's skin on her shoulders; but she had besides, another, which, being tied on in the form of an apron, covered her nakedness. I am of opinion that she had put on this garment more on account of the severity of the weather than from a sentiment of shame; for among the natives whom Captain Cook saw at Adventure Bay, at a few kilometers from this place, the women were all naked: therefore it is probable that at so short a distance there does not exist much difference in the manners.

In the night of the 28th the north wind blew in such hard squalls, that the *Espérance* drove, although

although she was riding by a very heavy bower anchor.

We had spent more time than we intended in exploring D'Entrecasteaux's Strait. To get out of it, we had yet to go about the distance of a demi-myriameter. The wind was against us, but the tide was in our favour, and we weighed anchor at half past nine o'clock. In working out we often stood within three hectometers of the coast, where our soundings were from twelve and a half to thirteen fathoms near the high lands, and from six to six and a half near the low lands.

We at length reached the extremity of the channel: the two points of land which terminate it are at most a demi-myriameter distant from each other, in a south-east and north-west direction. We borrowed pretty close on that on the starboard hand, where we found no more than from three and a half to four fathoms, at the outlet of the channel. So great a decrease in the depth of water naturally led us to presume that there was here a very hard rock, which resisted the daily current of the flood and ebb; and the lead informed us that this conjecture was well founded. This was the only foul ground that was remarked throughout the whole length of the Strait, whence we came out towards noon. We then discovered to the east by south an opening

ing of about three myriameters wide, which afforded a passage into the open sea.

To the northward we descried a vast bay, or rather a gulf, intersected by islets and terminated by the main land, which was seen in the distance; various bights in it seemed to afford there excellent anchorages.

CHAPTER VI.

Importance of D'Entrecasteaux's Strait.—Passage from Cape Diemen to New Caledonia.—We explore the south-west coast of New Caledonia.—Dangerous situation of the Recherche quite close to the rocks which skirt this coast.—We see the natives by the sea-side.—Small Archipelago at the northern extremity of New Caledonia.—Prodigious extent of the reefs.—We get sight of the Terre des Arsacides and of the Treasury Islands.—Survey of the west part of Bougainville's Island and of Bouka Island.—Dangerous situation of the Recherche on the shoals off Bougainville's Island.—Interview with the savages of Bouka Island.—Fondness of these savages for music.—Their dishonesty.—Canoes of these natives.—We determine the position of various points of Bougainville's Island, and of Bouka Island.—We anchor in Carteret's Harbour.—Various excursions into the surrounding country.—Continual rains during our stay in Carteret's Harbour.—Different observations.

WE had just completely finished one of the geographical discoveries the most important to navigation. It was of the greatest utility to ascertain

certain exactly at this extremity of New Holland, where impetuous winds prevail, the places of shelter which it can afford to ships assailed by storms. A roadstead of about four myriameters and a half in extent at the point of this vast island might hold out very great advantages to a commercial nation. A vessel may come to an anchor in any part of it with a certainty of finding a good bottom, with a depth of water of from six and a half to seven fathoms. Not a shoal is there to be met with. At an equal distance from its two extremities, where the rather coarse sand predominates, the ground is not so good ; there is also less water, for by the lead we had here only six fathoms. It should seem that the tide, entering by the two extremities at once, had drifted these sands into the place where the contrary currents meet. There is no danger to be apprehended in approaching the land to within the distance of two hectometers. The windings of this channel present a very diversified prospect and situations truly picturesque.

The season was far advanced, and the thermometer, although we were near the 44th degree of south latitude, had not been lower than 7° above 0. Boisterous winds were very prevalent in the offing, while in the Strait we enjoyed the calmest weather. We did not expect to find such perfect safety so near Storm Bay.

The

The fishes which delight in still water abound in this channel, where our fishermen were, in general, very successful.

Scarcely had we proceeded three kilometers beyond the outlet of the Strait, when we could no longer distinguish its opening. The soundings increased in proportion as we advanced into the open sea.

Our reckoning placed us at noon in latitude $43^{\circ} 1'$ south, and longitude $145^{\circ} 19'$ east.

We soon doubled Cape Pillar, and we then shaped our course north-east, in order to go and explore the south-west coast of New Caledonia.

The mercury in the barometer had fallen to 28 inches 8 lines, and the wind blew strong at north-west. The rolling of the ship made me feel as qualmish as at our departure from Brest. The stay we had recently made at Cape Diemen had already made me lose the habit of the sea.

By the 30th of May we had made considerable progress, since at noon we were in the latitude of $40^{\circ} 55'$ south, our longitude being $150^{\circ} 4'$ east.

The mercury of the barometer had fallen in the course of the morning to 27 inches 4 lines, and had not deceived us in announcing tempestuous winds. We could do no more than scud under the foresail, and that too we were obliged to reef; but fortunately we had a fair wind.

Although the thermometer was not lower than

9° $\frac{1}{2}$ above 0, the cold was nevertheless very sharp. The violent agitation of the air appeared to me to be the principal cause of the sensation which we experienced.

Having on the 1st of June reached the latitude of 37° 17' south, and the longitude of 154° 5' east, we saw a considerable number of white and black spotted petrels (*procellaria Capensis*), and a great many albatrosses remarkable for the very deep fawn colour of the extremity of their wings.

The next day, the 2d, a great many flying fishes of the same species as those which we had so repeatedly met with in other seas, announced to us, by throwing themselves headlong on board, that we had got into the latitudes frequented by bonitoes.

The motion of the ship, since we had sailed, had thrown me into such a depression of spirits, that it had not been possible for me to pay the attention necessary for the preservation of the articles collected in my last excursions. On the 3d of June, the sea having become less rough, allowed me to engage in these pursuits: they were not at all damaged; I found them only covered with a little mildew.

Since our departure from New Holland we were reduced to a small quantity of water; and the heat, which, on the 5th, began to be very oppressive, rendered this privation still more

painful. We had only a bottle a day each man; yet our wants augmented in proportion as we advanced towards the torrid zone. We could not replace this beverage by the use of the wine, which daily became worse; besides, the brandy, which several already preferred to wine, made them require a greater allowance of water: the salt meat we lived on still more increased our thirst, which we had not the means to quench; and the extraordinary quantity of salt introduced into our humours, had communicated to them an extreme acrimony; and indeed the want of water is one of the principal causes of the disorders of seamen.

Some pintadoes, and many other birds, which we saw on the 6th of June, in latitude $34^{\circ} 47'$ south, and longitude $159^{\circ} 28'$ east, made us presume that we were in the neighbourhood of some island, yet too far distant, no doubt, to be perceived.

On the 11th, about the middle of the day, we thought that we discovered land to the eastward. After having steered in that direction for an hour, the phantom disappeared, and we immediately resumed our course.

A man-of-war bird, having come and hovered over our ship, was killed by a musket shot. This bird had still in its bill the species of cuttle-fish called *sepia loligo*. The man-of-war bird had

had probably seized this sea-insect at the moment when it had sprung out of the water. I had already seen, in the Mediterranean, this species of cuttle-fish rise several meters above the surface of the sea, by means of membranous expansions situated laterally towards its lower extremity ; some of them had even fallen into our ship.

On the 16th, about half past five o'clock in the morning, we entered the torrid zone, in the longitude of 165° east.

At eight o'clock we got sight of the Island of Pines, which is at no great distance from the south point of New Caledonia ; it appeared like a peak of middling height : we soon perceived the low lands by which it is surrounded on every side. Some large trees were distinguishable towards the south-east part of the island. Its position, which we found to be in the latitude of $22^{\circ} 42'$ south, and longitude of $165^{\circ} 14'$ east, differed only 4' from that assigned to it by Captain Cook, by our giving it 4' less in latitude, and 4' more in longitude.

At five o'clock in the afternoon we discovered the shores of New Caledonia to the north-west, at the distance of about four myriameters and a half, and we stood on in order to approach them ; but we were obliged to heave to at sunset to wait for the *Esperance*, whose sailing was

always far inferior to ours. We then set the coast, bearing from north 32° west to west 32° north. We were still too far from it to see the reefs which lie between this island and the Isle of Pines. The *Espérance* joined us about eight o'clock in the evening; we were to have spent the night in standing off and on; but it falling calm, our ship would not answer her helm.

The south-west winds had brought us to New Caledonia, although we had expected to meet with the general winds several days before we got sight of this land.

The little change in the variation of the compass, in the run that we had just made, is very worthy of remark. It may be considered as nothing from the 36th degree and a half of south latitude, and the 154th degree of east longitude, where the variation was $11\frac{1}{2}^{\circ}$ east, to the 23d degree of south latitude, and 164th degree of east longitude, where it was found to be $11^{\circ} 4'$ east; for in this space of $13\frac{1}{2}^{\circ}$ in latitude, and $10\frac{1}{2}^{\circ}$ in longitude, the compass did not vary a degree; and it is well known, that at sea its variation cannot be ascertained at the nearest to within a degree.

During the night of the 17th was perceived a fire lighted by the savages on the Island of Pines.

As

As soon as day appeared, we saw an extensive reef of rocks, which, from the coast of New Caledonia, took a direction towards the south, and afterwards to the west. A calm detained us the whole morning between these dangerous rocks and the Isle of Pines; fortunately a light breeze from the south-west, which sprang up in the afternoon, carried us clear of the breakers.

When at noon we had observed in latitude $22^{\circ} 49'$ south, and our longitude was $164^{\circ} 40'$ east, the south point of New Caledonia bore north-north-west, distant four myriameters. This extremity is in latitude $22^{\circ} 30'$ south, and longitude $164^{\circ} 30'$ east.

We had lost sight of the chain of rocks; but on the 18th, about eleven o'clock, we perceived its southern extremity at two myriameters to the north-west by west. This short distance from our ship, when at noon we took an observation, apprized us that they stretched some miles more to the southward than Captain Cook had imagined, since we found them to extend as far as the latitude of 23° south, their longitude being $164^{\circ} 31'$ east.

These reefs, which we approached to within the distance of two kilometers, lie near four myriameters from the coast, and in that space afford very smooth water; we had to make several tacks in order to get clear of them.

We made little way in the course of the morning of the 19th, since at noon, being in latitude $23^{\circ} 3' 48''$ south, and longitude $164^{\circ} 8' 20''$ east, the west point of the reefs was still in sight, bearing north-west by north, distant two myriameters. We stood north-west by west, in order to double them, and get near the coast.

We continued making short boards all night under our topsails, endeavouring to keep at a little distance from our consort. It was necessary that we should be near enough to acquaint each other, by signals, of the dangers into which we might fall on this coast lined with shoals, till then unknown to navigators.

During the night, the currents had carried us nearer to the reefs which we thought we had weathered. We were standing in for the land when the day fortunately broke, and shewed us all the danger of our situation. Surrounded by shoals, there remained but very little room for us to ply in. The south-south-east wind freshened, and increased the sea, which set us towards the breakers. We were already quite in the middle of them, when the *Esperance* made the signal for them: at this time Rossel had charge of the deck. The ship was immediately brought close to the wind on the starboard tack, in the intention of tacking, in order to get out of this dangerous situation: the *Esperance*

rance had just put about, and we saw her now standing off with her head to the westward.

All hands were immediately called upon deck, in order to work the ship so as to make her surer in stays. Roffel endeavoured four times in vain to tack, and each attempt served only to bring us nearer to the reef. We saw the ship drifting on the rocks, where the sea, ready to swallow us up, rose to a prodigious height. There was not a possibility of letting go the anchor, for we could get no bottom with a line of fifty fathoms, although we were quite close to the reef. Already each of us was casting his eye on the objects of which he might seize hold in order to escape from an almost inevitable death; in short, destruction stared us in the face, when by an unexpected piece of good fortune, a fifth attempt to tack succeeded, and it was with inexpressible joy that we saw our ship standing away from this dangerous coast.

A few islets appeared between the land and the chain of reefs, which at most was not more than a myriameter distant from the shore.

The lands of New Caledonia becoming lower towards its southern extremity, already began to exhibit some mountains of middling elevation, which, stretching at first from the south-east to the north-west, afterwards turned a little towards the north.

"When at the approach of night we tacked, the topmen had neglected to rig in the main topmast studding-sail boom, and the mizen topmast studding-sail boom: they were both carried away at the moment when we were preparing to make another board; the main topmast studding-sail boom fell into the water, but the mizen topmast studding-sail boom, in its fall, wounded three persons, among whom was Admiral D'Entre-casteaux himself.

We ran into the offing to spend the night; and the next day, the 21st of June, we stood in for the land. A breeze from the south-east permitted us to range to the north-west, at the distance of a kilometer and a half along the reefs, which bar the approach to it, and are distant from it only a demi-myriameter. We hoped to discover here some inlet that might permit us to go and anchor under the shelter of this barrier, against which the sea was breaking in a frightful manner.

A considerable column of smoke, which rose near the foot of a hill, not far distant from the sea-side, indicated that this part of the island was inhabited.

Since noon, when our latitude was $22^{\circ} 6' 58''$ south, and our longitude $163^{\circ} 34' 36''$ east, we had run near two myriameters to the north-west, when we discovered between the reefs a large opening,

opening, which seemed to promise us a passage by which we might go and anchor near the coast; unfortunately it was late in the day, and the sea being too rough, did not permit us to send a boat to sound this entrance. We much regretted not being able to enjoy the smooth water that reigned behind this rampart, against which the sea was spending its fury in vain.

Some hills almost entirely destitute of vegetables, rose in the form of an amphitheatre, as far as the principal chain, which appears to be at least eighteen hundred meters in perpendicular height, and the direction of which is constantly to the north-west. We there discovered three rows of mountains of different degrees of elevation; and we remarked, throughout all the height of the most arid hills, gullies which seemed to be formed by the fall of the rains.

Behind these high mountains was seen one from four to five myriameters inland, which rising considerably above the others, appeared to be at least two thousand four hundred meters in perpendicular elevation.

From the middle of the gullies issued a torrent, which we distinguished perfectly from the whiteness of its foaming waters, although we were at a great distance.

The cold that is felt on these heights, no doubt subjects the inhabitants to the necessity of warming

warming themselves. We perceived several large fires, which they kindled while we were making short boards in the offing during the night.

On the 22d we were unable, on account of the faintness of the south-east wind, to get in with the reefs before noon: we were then in latitude $21^{\circ} 51'$ south, and longitude $163^{\circ} 8'$ east; we stood along these reefs till the evening, without finding in them the smallest break.

New Caledonia afforded us a more smiling prospect than the day before: we saw some trees rising from the bottom of the gullies, with which the hills are furrowed.

A fire lighted on the coast, let us know that these barren shores were not entirely destitute of inhabitants; and it was not long before we perceived some of them.

The wind having shifted from north-east to north and north-west, we hove to about ten o'clock at night. This certainly was not the best plan to adopt, for in the neighbourhood of shoals, a ship should always be kept under command, so as to be ready to avoid them: it would doubtless have been preferable to make short boards, in order to be able to manœuvre properly in case of any unforeseen danger.

The whole night of the 23d we were thwarted by

by the winds. Our latitude at noon had been $21^{\circ} 37'$ south, and our longitude $162^{\circ} 47'$ east.

We had a view of some mountains covered with trees to their very summit.

Six fires, which we perceived in the vicinity of the coast, announced a great concourse of savages; they were probably attracted by the sight of our ships, which contrary winds kept almost in the same place.

At three o'clock we were six myriameters and a half from the land, when we perceived near the beach a group of twelve New Caledonians, whose looks were turned towards us, and who seemed to behold with astonishment our ships at so short a distance from their island.

Three natives formed another group, and kept very near two fires which they had just kindled.

A good glass convinced us that they were entirely naked. They did not appear tempted to put a canoe into the water, in order to approach us; besides, the reefs opposed to them a barrier which they would have been unable to clear, so as to come to our ships.

On the 24th, a strong breeze from the southwest had obliged us to keep plying, and we again found ourselves almost in the same place as on the preceding day. The land was covered by a fog,

fog, which had constantly accompanied the winds from the south-east.

Our observation had just placed us in latitude $21^{\circ} 46'$ south, our longitude being $162^{\circ} 46'$ east, when we imagined that we discovered, between the reefs, an opening, which perhaps would have afforded us a passage; but how was it possible to ascertain the fact, with strong winds, which were blowing dead on the shore?

On the 25th, as soon as the wind had shifted to the south, the fog was entirely dispelled: those winds which bring the cold into these latitudes, restored to the air, at sun-set, the super-abundance of water which it had kept in a state of solution during the day; accordingly we then received a few large drops of cold rain, which fell very wide from each other.

For the last two days we had advanced only a few kilometers in our survey * of the coast, on which we had seen several fires, lighted

* The word *survey* is not here, nor in several other parts of these pages, to be understood in its literal sense. To survey a coast, according to my ideas, is to take a geometrical plan of it, in which every place is to be assigned its true situation. The reader will be convinced that such an operation is seldom practicable. In my application of the word *survey*, I am justified by the authority of Captain Cook and other circum-navigators. T.

probably

probably by the same natives who had kindled the others.

We were also counteracted by the winds the two following days, the 26th and 27th: but on the 28th, a pretty fresh breeze from the south-east favoured us in the route which we intended to follow, in ranging along the coast. The lofty mountains which we had hitherto seen, now gradually diminished in height; the chain seemed to terminate here, but farther on they resumed nearly the same elevation; and the island, towards its northern extremity, was observed to be formed of large mountains, the aspect of which, at this distance, differed in no respect from those we had remarked on the preceding days.

At noon we had observed, in the latitude of $20^{\circ} 28'$ south, when our longitude was $161^{\circ} 29'$ east, and we presently discovered, that, a little on this side of the extremity of the island, the chain of reefs was broken, and exhibited a large cut, which made us hope for an anchorage; but it blew much too fresh for us to be able to hoist out a boat, to sound this opening. We spent the night in standing off and on, in hopes that the weather would be more favourable next day.

In the direction of the lands of New Caledonia we discovered several islands, surrounded

by reefs, and connected with each other by sand-banks and shoals.

During the night of the 29th the winds had set us so far to leeward, that we had lost sight of the northern extremity of New Caledonia, which was found to be in the latitude of $29^{\circ} 58'$ south, and longitude of $161^{\circ} 10'$ east. This island presents a chain of mountains, which occupy an extent of near forty-eight myriameters, from south-east to north-west. Its mean breadth is not more than from three to four myriameters. Captain Cook, who discovered it in 1772, saw only its north-east side. It was important to navigation to explore its south-east coast: the rocks by which it is skirted, are generally from five to six kilometers distant from the shore; and towards its extremities, where it is the narrowest, there are some at a greater distance. This coast, which is extremely dangerous at all times, is still much more so with the south east winds, which had singularly thwarted us in the survey that we had just made of it.

The small number of fires which we perceived on this land, and its apparent sterility, incline me to think that it is thinly inhabited. We saw not a single canoe, although it is very easy to navigate there under shelter of the reefs, where the sea is exceedingly smooth.

At seven o'clock in the morning we saw from the north-north-east to the east-north-east, several

ral mountainous islands, and some detached rocks, which render this extremity of New Caledonia still more dangerous than the south side of it. Some of these islets are several kilometers in extent. A great number of rocks, of a black colour, raise their points above the water: washed by a sea scarcely ruffled, these rocks seem to be in motion, and at first sight they might be taken for canoes, riding on the waves. It was soon discovered that these islets were numerous, for from the masi-head they were discerned, as far as the eye could reach: they are surrounded by reefs, in the midst of which the sea assumes the tint of the reddish sand that covers the bottom. We reconnoitred them closely, and about eleven o'clock we were three kilometers to the southward of one of these little islands, when we perceived breakers, which stretched off from its western point, and extended out of sight to the west-north-west.

Having observed at noon, in latitude $20^{\circ} 6' 4''$ south, our longitude being $161^{\circ} 10' 36''$ east, we set a small island, bearing east 20° north, distant two kilometers.

Another island, distant a myriameter and a half, bore north 8° west: these two islands were connected to each other by reefs.

Other islands were seen to the north-north-east half east.

A fire, lighted on the islot that was nearest to us, quite close to a rivulet, which ran down from the mountain, apprized us that these small islands are frequented by the natives.

The easterly wind blew in the evening, in heavy squalls, which would have incommoded us prodigiously in any other situation, but we were sheltered by the islands and the reefs, and therefore it was easy to spend the night in making short boards.

On the 30th we discovered to the eastward a few islets, which seemed to terminate this Archipelago. Their height gradually diminished in proportion to their distance from New Caledonia: they seem to be a continuation of the mountains of that large island, the bases of which, covered by the sea, rise here and there to form so many islets. The gradual diminution of the height of these mountains must induce a presumption, that there are hereabouts, even to a great distance, shoals, which increase the danger of navigation in these seas. It will be seen that this conjecture was not void of foundation.

Steering to the north-west, we ranged close along the reefs, which prohibit the access to these islets.

The Admiral signified to the Captain of the *Espérance*, that in case of the separation of the two ships,

ships, the rendezvous would be Port Praeslin, or Carteret's Harbour.

Our latitude, observed at noon, was $19^{\circ} 29' 10''$ south; our longitude was $160^{\circ} 36' 12''$ east: the islet which appeared to be the most northerly bearing east, at the distance of a myriameter and a half.

We saw the chain of reefs extending to the north-west as far as the eye could reach, and occasionally forming sinuosities, taking its course towards the west. With the wind at east-south-east, we could, without difficulty, follow all the windings of these shoals. Since the middle of the day we had coasted them for the distance of four myriameters, when we thought that we perceived their extremity. We were congratulating ourselves on having already terminated this dangerous and fatiguing navigation, in order to enter into an open sea, when the men looking out at the mast-head, called out that there were shoals and a chain of reefs, stretching to the north-north-west: it being too late to stand towards them, we kept to windward during the whole night.

A booby, of the species called *pelecanus varius*, suffered itself to be caught on board, at sunset: it differed from the common species by its colour, which was not near so dark. This bird had come without mistrust, and settled in the main top, by the side of one of our sailors: it

is very remarkable how little these birds are afraid of man; frequently they even alight on the arm which is held out to them. Their smell must be by no means acute, the whole opening of the nostrils consisting of only two trifling slits in the upper mandible of the bill. This mandible is moveable like that of parrots.

We imagined that we had at length terminated the survey of this frightful chain of reefs, which bar the sea for a space of near sixty myriameters from south-east to north-west; and we were already at about two myriameters and a half to the northward of them, when at noon, on the 1st of July, our observation placed us in latitude $18^{\circ} 50'$ south, our longitude being $160^{\circ} 32'$ east.

We then steered north-north-east, in order to ascertain whether these reefs did not extend more to the north-east.

About two o'clock in the afternoon, one of the ship's company, named Moulin, discovered to the northward, at the distance of two myriameters, a small low island, covered with very bushy trees, and guarded by reefs which trended to the west north-west. This island is not more than a demi-myriameter in circumference; it is situated in latitude $18^{\circ} 31' 10''$ south, and longitude $160^{\circ} 32' 14''$ east.

In compliance with the promise which the Admiral had recently made, this island was called

L'Isle

L'Isle de Moulin, Moulin's Island, from the name of him who had first discovered it.

At four o'clock we got sight of two other small islands, lying to the north-west by north, at the distance of a myriameter and a half. It was impossible for us to pass beyond these islands before night; for which reason we directed our course to the south south-east, and soon after brought to, till the next morning.

During the whole night we were surrounded by a great number of birds, inhabiting these low islands: some man-of-war birds came, notwithstanding the darkness, and soared at a little distance over the ship, and several boobies settled on our yards.

The Admiral had intended to go and anchor under the lee of Moulin's Island; but we had been carried upwards of a myriameter to leeward, and it would have been very difficult to recover this ground, against currents and contrary winds. We stood to the north north-east; and it was not long before we saw, to the northward, some breakers, not very far from the two islets which we had discovered the day before: we steered along them at the distance of two kilometers in their direction towards the north-west.

By our observation at noon we were in latitude $18^{\circ} 7' 46''$ south; our longitude being $160^{\circ} 32'$ east; and at this time the nearest reefs lay

two kilometers to the eastward of us. We continued ranging along them, steering north-west by north.

About a quarter past one o'clock we discovered, at a myriameter and a half to the eastward, a low and very woody island, which appeared to be at least a myriameter and a half in circumference: it was surrounded by rocks almost even with the water's edge. Being thwarted by the winds, we stood on close-hauled: some breakers extended about a myriameter and a half to the north-east, and from the middle of these reefs were observed to rise points of black rocks, like those we had before seen.

This new island is in latitude $18^{\circ} 3'$ south, and its longitude is $160^{\circ} 31'$ east.

We stood on to the northward, and about four o'clock in the afternoon the last of these rocks bore east, distant a myriameter and a half: here appeared to terminate the reefs, which seemed to trend to the eastward, and then to the southward: their northern extremity is in latitude $17^{\circ} 54'$ south, and longitude $160^{\circ} 30'$ east; and it lies about six myriameters to the northward of Moulin's Island.

It was easy for us to perceive, by the heavy sea, that we were clear of the reefs.

A great number of tropic-birds, boobies and man-of-war birds, had quitted the different islets,

iflots, which serve them as a retreat, in order to come and fly round us during almost the whole day. We had seen floating several trunks of co-coa-nut trees, torn up by the roots by the sea, and drifted about at the mercy of the waves.

When we brought to, at six o'clock in the evening, we sounded in fifty-three fathoms, over a bottom of fine sand, being then in the latitude of $17^{\circ} 51'$ south, and longitude of $160^{\circ} 18'$ east. We remained for an hour on this bank, where the lead being hove at different times, gave us a depth of water of from fifty to sixty-six fathoms.

We had therefore at length terminated our survey of a frightful chain of reefs, which are the more dangerous to the northward, as they are out of sight of all land: although they had appeared to us interrupted to the northward of New Caledonia, it is probable that they extend and unite again too far to the eastward for us to have discovered them.

These reefs, as is well known, are the work of *polypi*; and the danger which they present is the more to be dreaded, as they form steep rocks covered by the water, and which cannot be perceived but at a short distance: if it falls calm, and a ship is drifted towards them by the currents, her destruction is almost inevitable; in vain would the crew attempt to save them-

selves by letting go the anchor, for it would not reach the ground, even quite close to these walls of coral, which rise perpendicularly from the bottom of the waters. These *polyparii*, whose continual growth obstructs more and more the bottom of the deep, may well be a terror to navigators; and a great many shoals, which at this day afford a passage, will, ere long, form reefs extremely dangerous.

The magnetic needle experienced little variation during the whole time that we were sailing along this immense chain of rocks, since, from their southern extremity, where it was observed to be 11 degrees east, it had diminished only two degrees, when we had reached its northern extremity.

The next day, the 3d, in standing to the north north-east, we saw no more breakers.

On the 7th, about half past nine o'clock at night, the moon having risen nearly 15 degrees above the horizon in the east, we had in the west the sight of a lunar rainbow; it differed from the solar rainbow only by its colours not being so brilliant. This phenomenon is far less frequent, than it is natural to expect.

We were now reduced to a very scanty allowance of water, which was a prodigious inconvenience, in latitudes so near the line, and there were no means of procuring more, although

we

we had on board a machine, of the invention of Dr. Poissonnier, a physician: this discovery could be of no service to us, for to use it required a great deal of fuel, and when a ship is in want of water, she generally runs short of wood.

At ten o'clock in the morning of the 9th we got sight of the *Arsacides*, and stood directly in for Cape Nepean. These islands, discovered by Surville, a Captain in the service of the *ci-devant* French East-India Company, were since seen by Lieutenant Shortland, who having imagined that he had made a new discovery, gave them the name of New Georgia.

At noon, our latitude by observation was $8^{\circ} 52'$ south, our longitude being $154^{\circ} 38'$ east. The nearest coast then bore east by north, distant three myriameters.

About half past four o'clock we discovered the rock called the Eddystone, a myriameter and a half to the north-west. At a distance we took it, like Shortland, for a ship under sail. The illusion was the greater, as it is nearly the colour of a ship's sails: a few shrubs crowned its summit.

The shores of the *Arsacides* opposite to this rock are steep, and covered with large trees to their very top.

Several fires, lighted on the mountains, apprized us that they were inhabited.

Our observations placed Cape Nepean in the latitude of $8^{\circ} 49' 10''$ south, and longitude of $154^{\circ} 56' 24''$ east.

The Eddystone rock is in latitude 8° south, and longitude $154^{\circ} 5'$ east; and consequently more to the eastward than it is laid down by Shortland.

At two o'clock in the morning we hove to till daylight.

Early on the 10th we discovered the Treasury Islands, four myriameters distant to the north-west by north: they lie twelve myriameters north-west of the Eddystone.

At noon we were a demi-myriameter from the west point of the island which lies the farthest to the westward, and which is the largest of this little group; its latitude is $7^{\circ} 25' 36''$ south, and its longitude $152^{\circ} 56' 34''$ east.

Five or six of these islands lie so near to each other, that, at a distance, it would be supposed they formed only one; this was imagined to be the case by Bougainville, who discovered them to the westward in passing through the channel to which he has given his name. The *Espérance* distinguished no more than three of these, while we distinctly saw five; and perhaps, on a nearer approach, we should have discerned a greater number. The mountains which form these islands are of a moderate

height, and covered with large trees in almost every direction. This little group occupies a space of about six myriameters in circumference, the east and west points of which stretch out into the offing, forming shoals.

After having sailed round it, we stood to the north north-east, in order to go and reconnoitre the west part of Bougainville's Island. At five o'clock in the afternoon we were at a short distance from its southern extremity, where we saw a cluster formed by ten islets, the greatest extent of which is from east to west. Being covered with large bushy trees, through which were seen issuing the tufts of a few palms, these islets afforded an enchanting prospect. We remarked between them, and quite close to the south side, some breakers, which render the approach to them very dangerous.

Two canoes, in which we distinguished a great many natives, were under sail, and seemed to direct their course towards us; but they passed behind the islet that was the nearest to our ship, and, owing to their rapid progress, we soon lost sight of them. We perceived on the shore of this island a group of ten natives, and quite close to them a canoe on the sand: they made no dispositions for launching her to pay us a visit. As night was coming on, we were obliged to tack, in order to gain an offing.

After

After a violent fall of rain, by which we were inundated during the night, a thick fog concealed the land from us, and did not permit us to approach it till the next day, a few hours after sunrise.

Some reefs, even with the water's edge, scattered over a space of a few hectometers, were discerned about eleven o'clock, at two myriameters and a half from the coast, and warned us of the danger of approaching it. We saw the summits of the lofty mountains of Bougainville's Island reaching to the clouds.

The land again became obscured in fog, and we were obliged to wait till the 13th before we could continue our survey of this coast.

We then had the beautiful prospect of the high mountains, which, gradually sloping, formed large vallies, and afterwards spread into vast plains, where, however, we saw no appearance of culture: the whole was covered with trees, even to the most lofty summits, which appeared to be at least two thousand four hundred meters in perpendicular height, and to be upwards of four myriameters inland.

Some fires on the hills apprized us that this island was not destitute of inhabitants.

About half past eleven o'clock, being a myriameter and a half from the coast, we thought that we were in the greatest safety, when we found

found ourselves carried towards a shoal which the people on the look-out had not perceived : the water was so very shallow, that we could easily distinguish the fishes at the bottom, and a few points which rose higher than others, made us fear every moment that we should see the ship strike on the rock.

Our depth of water was then four fathoms and a half ; and the boat, which was quickly dispatched to go and sound this shoal in different points, found no more than three fathoms and a quarter on one of its extremities, with constantly a bottom of coral.

We were then involved in the most imminent danger, surrounded as we were on all sides by shoals, on which we ran the risk of being cast away.

Boats were sent from each ship to go and sound on these rocks, where the shoalest water was found to be three fathoms ; the smallest swell might consequently have made us touch, and have knocked out our bottom.

These rocks, as well as the reefs of New Caledonia, are the work of *polypi* ; like those reefs, they are built perpendicularly, and quite close to them we got no ground with a line of a hundred fathoms. These shoals rise like so many columns from the bottom of the water, and their

their progressive growth augments from day to day the danger of navigation in these seas.

At noon, being in latitude $6^{\circ} 13' 11''$ south, and longitude $152^{\circ} 7' 51''$ east, we brought to, and continued in that situation till two o'clock.

Several trunks of trees floated alongside the ship. We found on one of those which the boats brought on board, a notch of ancient date, which demonstrated that the inhabitants of the neighbouring island have some very sharp instruments; perhaps they have still remaining some of the hatchets given them by Bougainville.

We were imperceptibly drifting on a shoal; but we fortunately discovered it in time to avoid it.

The hands at the mast-head had orders to be doubly vigilant and attentive; nevertheless we found ourselves close aboard of another shoal, which we were obliged to get clear of like the first, at the risk of seeing our ship go to pieces on the rocks; we had on it the same depth of water. The swell had been very heavy on the edges of this bank of coral.

Our situation was the more dangerous, as night was coming on, and as these shoals being distant from the coast, gave us reason to apprehend that we should meet with some in the offing. How was it possible to avoid them in the middle of a dark night? We were under

the

the necessity of trusting the ship to the safety of chance. We hove to till daylight, with our head to the south-west, and we sounded very frequently without striking ground.

About three o'clock in the morning of the 14th, the *Espérance* made several signals, which created the greatest alarm on board our ship. We thought that they indicated some danger; but it was merely to apprise us that she had just got soundings in forty-one fathoms. We filled, and stood off a little from the coast, and at daylight hauled up and ranged close along it. The chain of mountains then began to diminish in height.

A few islets, which were detached from Bougainville's Island, were connected with each other by reefs on which we saw the sea breaking; these were not the only dangerous places on this coast; some sunken rocks formed shoals, which followed the same direction. These banks of coral were doubtless covered with fish, for we saw there a great many sea-birds seeking their food.

A canoe, in which were six natives, lay behind the islets nearest our ship. As we were standing on with a fresh breeze, we soon ran past them.

The part of Bougainville's Island which we perceived, seemed much more inhabited than what

what we had hitherto seen: fine plantations of cocoa-palms which lined the shore, left us no doubt respecting its great population.

Being at noon in latitude $5^{\circ} 43' 12''$ south, and longitude $152^{\circ} 3' 26''$ east, we observed that Bougainville's Island formed, with the islets which surround it, a bay of near three myriameters in extent. The Admiral had an intention of anchoring in it: but some shoals discovered in different points of its opening, and a sand-bank towards its head, made him alter his mind.

Bougainville's Island is terminated by some very low land; and we presently discovered the extremely narrow channel which separates it from Bouka Island.

After having gained an offing, we continued lying to during the whole night.

The heat of the day had amassed the electric matter above the high mountains; frequent flashes of lightning made us perceive their summits, and the thunder roared with a horrible noise.

During the night, the currents had carried us upwards of twenty miles towards the north. We were, at ten o'clock in the morning, a myriameter to the northward of Bouka Island. The vast plantations of cocoa-nut trees which skirt the shore, announce a numerous population.

A canoe,

A canoe, containing nine savages, put off from the coast, and directed her course towards us. We immediately brought to, in order to wait for them ; but they stopped when they were six hundred meters from our ship : they pointed to their island, and invited us by signs to come on shore. In this canoe there were only seven paddlers ; two other natives seemed to be solely employed in baling out the water which they shipped, and watching our motions.

A savage who had put off alone from the coast in a catamaran, paddled with the greatest rapidity, and came up to the canoe, which constantly kept to windward of us ; he was a very old man, and yet remarkably stout. After having observed us for a few minutes, he returned towards the island as quickly as he had come : he probably was a messenger dispatched by the inhabitants, and now returned to give them an account of what he had just seen.

The canoe quitted us to go towards the *Es-pérance* ; a very large one was already alongside of her.

We saw at a distance another small canoe, carrying five natives, who came astern of our ship, from which they kept at about a hundred meters distance, notwithstanding all the invitations that we made them to come on board.

We

We put in the water a plank loaded with knives and nails, and to the end of a small stick, fixed in its middle, was fastened a piece of scarlet cloth in the form of a flag, in hopes of enticing the savages to come closer: however, they did not take possession of these articles till we had cut the line that held them at a small distance from our ship, which they would not approach. The sight of the scarlet cloth diffused among them the most lively joy; they displayed it the moment they got hold of it, and asked us for more with much earnestness.

We at length succeeded in attracting them quite close to the ship, by throwing them some handkerchiefs, a few pieces of red cloth, and some empty bottles: one of these bottles having partly filled with salt-water, the savage who picked it up, thinking perhaps that it contained some liquor good to drink, was very disagreeably deceived on discovering the contrary; we regretted not having been able to apprise him in time of this mistake.

These natives perfectly understood traffic; they took good care to let us know the value which they set on their property.

A very handsome bow was sold to us for some handkerchiefs, which we had sent them by means of a line; we likewise received some arrows. As they did not see among us this sort of

of weapon, they tried to make us sensible of its value, by shewing us the manner in which they used it.

One of the gunners fetched his violin, and played several tunes: we saw, with pleasure, that they were not insensible to music: they offered a great number of articles in exchange, in order to obtain this instrument; they asked for it by imitating, with a paddle held as a fiddle, the motions of our minstrel. It may easily be imagined that their solicitations were unavailing: this was the only fiddle that served to set the ship's company a dancing, and the voyage was not sufficiently advanced for us to part with an instrument which promoted an exercise so conducive to the health of seamen.

We loaded these savages with presents in such a manner, that they soon made the greatest difficulties to give their effects in exchange for ours; and they frequently blended artifice with dishonesty in order to procure them. The Admiral wishing to have a bow, some handkerchiefs striped with red, the favourite colour of the savages, was the price agreed on: these were given to them in advance, too implicit a confidence being placed in their probity; as soon as they had received the handkerchiefs, they would not part with the bow, but only with some arrows, which were refused.

These natives are remarkable for the gaiety of their disposition. They often took a pleasure in repeating the words which they heard us pronounce; and this the softness of their language enabled them to do with a great deal of facility.

Being passionately fond of music, lively and noisy tunes produced the greatest effect on them. One of our officers, who played tolerably on the violin, struck up a tune in very quick time, stopping double. At first they listened with the greatest attention; astonishment was painted in all their countenances: presently they were unable to contain their joy; while various motions of the arms, which perfectly accompanied the time, and a great agitation of the whole body, were unequivocal marks of their feeling.

We did not lose sight of the wish that the Admiral had expressed to have a bow: a native promised one in exchange for a hat; but no sooner had he got the hat, than he refused to part with the bow.

Most of the articles that we lowered down to them were fastened to the end of a line, which they did not give themselves the trouble of untying, for they had in their girdle a shell sharp enough to cut it immediately.

As we were thoroughly justified in trusting no longer to their promises, one of our people was going over the stern of the ship, by means of

of a rope-ladder, in order to receive a bow for a piece of red cloth, when it was perceived that, being drifted to the north-west by the currents, we were already much too near to the coast. Our ship would no longer answer her helm, on account of the calm; and it was necessary to hoist out a boat immediately to tow her head round again to port. The savages, thinking, no doubt, that our intention was to get hold of them, in order to punish them for their dishonesty, made off with the greatest precipitation towards their island. In return, perhaps, for the patience with which we had suffered ourselves to be robbed, they did not commit any act of treachery, as they had done towards the ship which Bougainville commanded in his voyage round the world.

During all this time four canoes were communicating with the *Espérance*; one of these canoes carried forty natives, sixteen of whom were employed in conducting her, each with a paddle; the others were warriors.

We learnt from the *Espérance*, that this war canoe had kept for a long time at a distance, and that she had not determined to approach, till after the natives in the smaller canoes had shewn their countrymen various articles which they had received.

The order which prevailed in the distribution

of the savages on board of this large canoe, indicates that they have a sort of naval tactics. Between two paddlers placed on the sides, a warrior stood up, holding in his hand a bow and arrows; some intermediate ranks were composed of two other warriors, and sometimes of three, who had their head turned towards the stern of the canoe, in order to observe all the movements on that side, and to be ready to fight retreating. These warriors had manifested no hostile views: they had seemed to take a pleasure in drinking the brandy and the wine which had been given them; they likewise ate some salt pork, but not without a certain degree of repugnance.

The savages who came to our ship had excellent teeth, for they ate without any difficulty the hardest biscuit that we could offer them.

I know not whether these islanders have had any communication with the English and the Spaniards; but one of them holding up an arrow, which he had made fast to the end of a line, in order that we might haul it in, pronounced very distinctly the English word *arrow*; and another making us a sign to go on shore, and pointing to the island, pronounced the word *tierra*, which in Spanish signifies land.

The Captain of the *espérance* told us, that several of these savages pronounced the term *Bouka*, the name which Bougainville gave to their

their island. This word, which in the Malay tongue is the expression of negation, and which, when the first syllable is pronounced long, signifies to open, is no doubt a term in their language, which seems to have some analogy with the Malay; it however differs from it so much, that one of our people who spoke Malay with facility, could not understand them.

The value they seemed to attach to the nails, and various articles of hardware which were given them, informed us that they were acquainted with the use of iron.

These savages are of middling stature; the colour of their skin is a light black; they wore no clothes, and their muscles, strongly marked, announced the greatest strength: their countenance is very far from agreeable; but it is full of expression. They have a very big head, a broad forehead, which, like their whole face, is very flat, particularly below the nose, the chin thick and prominent, rather high cheek bones, a broad flat nose, a very wide mouth, and tolerably thin lips.

Betel-root, with the blood-colour juice of which they tinge their large mouth, still adds to the ugliness of their face.

Their ears, which were bored, were ornamented with very heavy rings made of shells, the weight of which had contributed to their great

size. Some of them had white and red stripes traced on their body: I remarked one whose hair and nose were powdered with a reddish earth, which appeared to me to be ochre; some wore bracelets woven of the fibres of the husk of the cocoa-nut.

Their frizzly and very thick hair formed a great bulk, like that of several Papous, whom we met with in the sequel.

They are in the habit of plucking out the hair from every part of the body, and one only was seen on board the *Espérance*, who suffered his beard to grow.

They all had the abdomen tightened by a cord, which passed round it several times, and which seemed to be intended only to increase the muscular strength of that part of the body. One of the natives had, probably also with the same view, his left arm bound up in three different parts of the body of the biceps muscle; some pieces of flat wood were placed on the external part of the same arm, for the purpose of supporting the effect of the cord.

It appears that these savages are very dexterous in the use of the bow. One of them had brought on board the *Espérance* a booby which he had just killed with an arrow; in the belly of this bird was observed the hole of the arrow by which it had been pierced.

These

These islanders have particularly turned their industry towards the making of their weapons, which are wrought with great skill. We admired the art with which they had coated with rosin the string of their bows, so that it might at first sight have been taken for catgut; it was covered near the middle with the bark of rattan, in order that it might be less worn, in letting fly their arrows. The lower part of these arrows is very light, it being formed of the stalk of the *saccharum spontaneum*; the other half is made of a very hard wood well sharpened; the point of junction is secured in a workmanlike manner, with about thirty turns of the filaments of the bark of rattan, as well as the lower part of the arrow, near the place that bears on the string, in order to increase its solidity.

Their canoes, which are made of several planks joined together with art, are of an elegant form, extremely well calculated for going fast through the water. See *Plate XLIII. Fig. 1.*

On the approach of night a current, which set to the north north-west, caused a rippling, that so much resembled the effect of a shoal as to deceive the most experienced eye: a boat was sent to sound there, but no bottom was found at twenty fathoms.

Violent claps of thunder issued, during the night, from the thick clouds which hung on the

high mountains, while we were standing to the south south-west, in order to try to hold our own against the currents.

We had just completed the survey of the west coast of the two islands, the east side of which Bougainville had explored, when he discovered them.

The most easterly and most southerly point of Bougainville's Island is in the latitude of $7^{\circ} 4' 50''$ south, and longitude of $153^{\circ} 18' 34''$ east.

Its north point, called Point Laverdi, is in latitude $5^{\circ} 34'$ south, and longitude $152^{\circ} 31'$ east.

The banks of coral which we found in the offing near Bougainville's Island, are in latitude $6^{\circ} 11'$ south, and longitude $152^{\circ} 2'$ east.

The north-east point of Bouka Island is in latitude $5^{\circ} 5' 36''$ south, and longitude $152^{\circ} 9'$ east.

The variation of the compass, after having gradually diminished, was no more than $7\frac{1}{2}^{\circ}$ east.

The currents along these coasts carried us constantly to the north-west, at the rate of from eight to ten miles a day.

The thermometer did not rise above 22° , although we were at a small distance from the equator.

At sun-rise on the 16th we saw, bearing from north 15° east, to north $22^{\circ} 30'$ east, at about three

three myriameters distance, a flat island to which Carteret gave the name of Sir Charles Hardy's Island. It is five myriameters to the north north-west of Bouka Island.

About one o'clock in the afternoon we got sight of Cape St. George, the south-east part of New Ireland. It bore west north-west, distant about four myriameters: its latitude was fixed at $4^{\circ} 54' 30''$ south, and its longitude at $150^{\circ} 39'$ east.

We kept our wind, and spent the night in making short boards.

As soon as the day broke on the 17th we directed our course for Carteret's Harbour, where we intended to cast anchor. After having left Hammer Island a demi-myriameter on the starboard hand, we steered so as to pass quite close to Booby Rock, leaving Leigh's Island on the larboard hand, and we bore up between Cocoa-nut Island and New Ireland, where we anchored about half past one o'clock in the afternoon, in thirty-one fathoms and a half water, the bottom very soft black mud, mixed with calcareous sand. We were then four hundred meters from Cocoa-nut Island. The north-west point of New Ireland bore west 12° north, distant a demi-myriameter, and the south-east point of the same land bore south 31° east, at the same distance,

and the middle of the north-west channel of Carteret's Harbour west 10° north.

Only a hundred meters nearer to Cocoa-nut Island, we should have lain as snug as in the best sheltered harbour. A ship may here anchor within a little distance of the land, since at twenty meters from the shore there are five fathoms, and farther off the depth of water increases very suddenly.

We landed on Cocoa-nut Island, in order to spend there the rest of the day. This little island, the most elevated spots of which are not more than a hundred and fifty meters in perpendicular height above the level of the sea, is formed of calcareous stones of an extraordinary whiteness. Risen from the bosom of the deep, time has effected little change in the *madreporæ* which enter into its composition; they may be discovered even on the rocks the most exposed to the inclemency of the weather. It is terminated to the south-east and to the north-east by a shoal of the same kind of stone. There is, between it and Leigh's Island, a sufficient depth of water to afford a passage to ships.

A great deal of rain having fallen during the night, there arose from the middle of the woods so considerable a humidity, that at every instant clouds were seen forming there: these clouds, which issued principally from the lowest situations,

tions, resembled, at first sight, the smoke of fires lighted in the forest; and as soon as they had reached a degree of elevation sufficient to experience the effect of the current of the air, they presently disappeared.

Cocoa-nut Island was covered with large evergreen trees: their roots, buried between the calcareous stones, found very little vegetable earth; but these trees did not grow with less vigour, on account of the great moisture of those spots. It was a charming sight to behold the beautiful tree known by the name of *barriingtonia speciosa*, attracted by the humidity, horizontally extending its branches very far out above the waters of the sea. Various species of fig-trees grew on this island. We expected to find here a great quantity of cocoa-palms, which even was one of the reasons that had made us prefer this anchorage to several others at no great distance: it was, however, with difficulty that we procured only a dozen cocoa-nuts.

We saw with concern, that among our people who had been on shore to cut wood, some had made no scruple to fell the cocoa-nut trees, in order to get at the fruit: they eagerly sought the young leaves of the top of the tree, which are very tender; these were a most agreeable treat to persons who had lived for a long time on salt provisions. Had we suffered them to have their

own way, there would not have remained a single cocoa-nut tree on the island; and this anchorage would have been deprived, perhaps for ever, of these resources, which are so welcome to navigators.

Night overtook us in the middle of the woods, and we enjoyed the pleasing view of a prodigious quantity of glow-worms, that, in their flight, diffused a tremulous gleam, by which we were more dazzled than lighted.

This was the hour at which the species of crab called *cancer ruricola* issued from the holes that it had dug. We trod on many of these crabs in returning to the place where the boat was waiting for us; and several persons of our party, before they knew what they had set their foot on, were afraid that it was some venomous animal.

The next day, the 18th, I visited the south-east part of Cocoa-nut Island: different creeping plants prevented me from penetrating very far into these forests.

Various species of *epidendrum* adorned the trunks of the thickest trees, and grew in the midst of a great number of ferns which were equally parasitical.

Along the coast I saw floating various species of *pandanus*, of the *barringtonia speciosa*, and of the *heritiera*, the trees of which shot forth their branches,

branches, and even their trunk, in a very remarkable manner above the sea.

Two men belonging to the ship, who had followed me, saw an alligator quite close to the beach, on the south-east extremity of Cocoa-nut Island. I do not imagine that this animal is very common there; for, during the whole time of our stay at this anchorage, no accident happened, although a great number of persons bathed frequently.

I remarked, towards the east part of this little island, several species of *nautili* disseminated amid the prodigious quantity of *lithophites* of which it was in a great measure composed.

We were astonished at the abundance and the constancy of the rain; it was like a torrent of tepid water, which was incessantly flowing, and which, however, did not prevent us from visiting the environs of our anchorage.

I returned for several days successively to Cocoa-nut Island, or to Leigh's Island.

It is very astonishing to meet there with so great a quantity of insects of different forms and colours, the activity of which the rains did not seem to diminish. These were for the most part *coleoptera*, which it was difficult to catch. The most diversified species belonged to the *cicendela* genus.

We enjoyed the pleasure of seeing various species

species of fig-trees, from whose summit hung a great number of radicles, which implanted themselves in the ground, to give birth to as many different stems.

The *cycas circinalis* is very common in the bottoms, under the shade of the large trees. Hard by we saw a shed newly constructed of boughs, where the savages had come to rest themselves. We still perceived there the remains of the meal they had made with fruits of the *cycas*, the kernels of which, eaten raw, are a very powerful emetic, as several of our people experienced; but the savages had roasted them, and we remarked the traces of fire on a great number of the husks.

The kernel which the fruit of the *cycas circinalis* contains is very bitter: the inhabitants of the Mo-Iuccas know much better how to prepare them than those of New Ireland, as I had occasion to observe towards the end of this voyage. Experience has taught them that maceration deprives it of its noxious qualities: this process may also succeed with respect to many other fruits, and a great number of roots, which may thus serve for the sustenance of animals, and even of man.

We saw on the ground a great many fruits of the *cycas* which the savages had not touched. Their succulent husk, which diffused a very agreeable odour resembling apples, contains fermentative parts sufficient to yield, when infused in water,

water, a good spirituous liquor: these fruits are here very abundant, and may be useful to navigators.

Among the large trees that grew on Cocoa-nut Island I saw with surprise a new species of *areca*, whose trunk, which rose to upwards of thirty-six meters, was no more than two thirds of a decimeter in thickness. It was difficult to conceive how so weak a tree could support itself at such an elevation; but our astonishment ceased when we wished to fell one: its wood was so extremely hard, that for some time it resisted the redoubled blows of the axe. A great quantity of mucilaginous substance, under the form of pith, occupied its centre, as is the property of many other trees of the same family: this pith being removed, the trunk exhibited a cylinder, the wood of which was not more than a centimeter in thickness; the wood is of a beautiful black. The fruit of this new species of *areca* is of a red colour; it is scarcely bigger than a common olive, and is nearly of the same shape.

The *caryota urens* was one of the large trees of this forest. Among the shrubs I saw several species of *dracæna*. I admired among the trees a *solanum*, undoubtedly the tallest species of that genus; those which are till the present day known to botanists being only herbs or weak shrubs: the leaves of this *solanum* are oval, hard, and very smooth.

Teak-wood, *tectona grandis*, that fine tree so valuable for the construction of ships, grows at Carteret's Harbour. I also saw there various species of *guettarda* and a new species of *hernandia*.

Mosses and ferns were very numerous, and grew in the fullest vigour in these moist spots.

The west coast of Cocoa-nut Island is steep, and rises very high above the water. The calcareous stones, of which it is formed, are very much exposed to the inclemency of the weather; accordingly they break off with facility. I there found the nutmeg-tree which Rumphius has described under the denomination of *myristica mas* (*Rumph. Amb.* vol. ii. tab. 5). The fruit was as yet in no great forwardness. It is more elongated than the cultivated species.

Doubtless some savage had perished in the midst of these rocks, for I found here a human skeleton almost entire.

Hard by was a spot where I observed the marks of a fire, which had been lighted by the savages who land on this coast.

The continual rains at Carteret's Harbour have there rendered some species of spiders very industrious: I saw several that had made themselves excellent retreats in the middle of their web: this is of a very close texture, in the form of a sugar-loaf, two centimeters high by a demi-centimeter wide at the base, having the point raised and

a little

a little inclined towards the south-east, in order that the prevailing winds may have less hold of its little habitation. The rain runs off this sort of cone, without being able to penetrate it, and cannot weigh it down, because it is distended on all sides by threads attached to the neighbouring branches. The spider, perfectly sheltered in this house, comes out of it only to seize upon the insects which happen to entangle themselves in his nets.

Another spider, which does not spin so dexterously as the former, secures itself from the rain by getting under part of a leaf that is bent in nearly a conical form, and is placed in the middle of its web: every thing is combined to give solidity to this dwelling: the corner being a little inclined, is opposed to the south-east winds, in order that it may suffer less from their violence.

Nature has been extremely bountiful to some other species of spiders, which are covered with a skin that is very tough, and as glossy as if they were coated with the finest varnish. These last are not in the least affected by the heavy rains to which they are constantly exposed, and they wait patiently in the middle of their web, till some insect is caught in it.

Among these spiders I discovered some whose body was terminated in a point, the *aranea aculeata* and the *aranea spinosa*.

Leigh's Island, which is much smaller than Cocoa-nut Island, affords few different productions; its soil is of the same nature, but is much elevated.

The steep mountains of New Ireland, which surround Carteret's Harbour, are at least three times as high as those of Cocoa-nut Island. I also saw, on their very summits, the marine productions, of which they are partly composed.

On the 23d I landed on the part of New Ireland that lay to the north north-west of the anchorage, near the spot where our water had been procured. The stream which furnished it shewed itself only very near the sea. Farther inland were seen the traces of a torrent, and from time to time along those traces, some cavities filled with water, which, filtering through the sands, ran and swelled the little rivulet of the watering-place. After an hour's walk along its banks, we saw it form a pretty cascade, and precipitate itself from the top of a calcareous rock in which we remarked vast caverns that served as a retreat to large bats of the species called *vespertilio vampyrus*.

A few wild bread-fruit-trees were growing in these places.

I was astonished that at a time when Carteret's Harbour was inundated by continual rains, we saw only the traces of the torrent, and no water in its bed; but it seemed to me that the rains did

not extend sufficiently inland to fill it: of this it was easy to be convinced by the serenity of the sky towards the south-west, while the rain was falling without intermission at the anchorage. Carteret's Harbour forms a sort of basin, where the clouds charged with water, after having cleared the high mountains of New Ireland, experience a calm which prevents the air from supporting them; thence result abundant rains, which must deprive navigators of all inclination to anchor there.

Among the small plants which grew in the shade of the forests, I remarked several species of *procris*.

Besides the nutmeg-tree, of which I have already spoken, nature has likewise given to the inhabitants of New Ireland the species of pepper-tree known to botanists under the name of *piper cubebe*. I saw it, throughout a very extensive space, adorning all the trunks of the large trees.

Our boat was sent a fishing about a myriameter to the south-east on the coast of New Ireland. I there saw a few huts newly constructed with much art by the savages: those had not, for their meal, contented themselves with the roasted fruit of the *cycas circinalis*: we still perceived quite close to these habitations, the remains of the shell-fish which they had eaten.

The Admiral had come to Carteret's Harbour,

in the intention of staying there at least a fortnight; but the heavy rains determined him to quit this anchorage much sooner.

The greatest activity had been exerted in obtaining the necessary supply of wood and water; and on the morning of the 24th we made every preparation for sailing.

The water that we took on board at Carteret's Harbour was very good, and had been procured with much facility. It was easy to convey it into the launch, by means of wooden troughs: the only trouble attending this was to dip it up from a meter below the trough.

The wood was cut on Cocoa-nut Island, and the conveyance of it was less difficult, as the boat could come to the very edge of the shore. It may not be improper to remark, that the wood which we took in at Carteret's Harbour, filled our ship with a prodigious quantity of scorpions, and a great number of *scolopendræ* of the species called *scolopendra morsitans*. These insects were extremely troublesome to us.

The tents of the observatory had been erected to no purpose on Cocoa-nut Island, the continual rains not having allowed the astronomers to make one single observation: it is difficult to form an idea of the vast quantity of rain that fell; it was a torrent, pouring down almost without intermission.

The thermometer, observed at noon during the whole time we lay here, varied from 19° to 21° , and the barometer varied only from 28 inches $1\frac{7}{10}$ lines, to 28 inches $1\frac{2}{5}$ lines.

The latitude of our anchoring-place was determined at $4^{\circ} 48' 10''$ south, its longitude at $150^{\circ} 25' 40''$ east.

This harbour afforded us no refreshments; nor did our fishermen meet with any success.

The tides were felt but once a day, and rose only about two meters.

CHAPTER VII.

Departure from Carteret's Harbour.—The Espérance loses an anchor at the mouth of this harbour.—Passage through St. George's Channel.—We get sight of the Portland Islands.—Various interviews with the inhabitants of the Admiralty Islands.—Their whimsical costume.—Despotism of the chiefs.—Canoes.—Astonishing rapidity of their sailing.—We make the Hermits Islands.—Their inhabitants.—We get sight of the Echiquier.—We discover a new Island.—A water-spout.—We make New Guinea.—Passage through Pitt's Strait.—Singular effects of the tides.—Ravages of the scurvy.—We anchor at Amboyna.

ON the 24th of July we got under weigh from Carteret's Harbour, about eleven o'clock in the morning, and we availed ourselves of a light breeze from the south-east, in order to sail out by the opening to the north-west, between Cocoanut Island and New Ireland.

The currents carried us to the west north-west, and at noon we were already a myriameter to the west south-west of our anchoring-place.

The

The *Espérance* did not weigh her anchor quickly enough to take advantage of the breeze : it fell calm almost as soon as she had loosed her sails, and the currents drifted her towards the breakers that lie on the starboard hand, in going out of the harbour ; she was therefore obliged to drop an anchor, and wait for a wind to extricate her from this dangerous situation.

We hove to, in hopes that ere long she would join us ; but it was half past four o'clock before she came up with our ship. Her captain then informed us, that they had like to have been lost at the mouth of the harbour we had just quitted. Forced by the currents to anchor on a bottom of coral, the cable had been cut by the rocks, at the moment when there sprang up, from the south-east, the light breeze which carried them clear of the reefs. They had come too near them to let go a second anchor to any purpose ; however, the *Espérance* got off, with the loss of an anchor and about eight fathoms of cable.

Our situation enabled us to ascertain, that St. George's Channel is not more than from six to seven myriameters in breadth at its southern extremity. It appears that the gloominess of the weather had led Carteret into an error, when he supposed that its extent was almost twice as much.

We lay to during the night, and the currents carried us into St. George's Channel, with so much rapidity as to occasion us to drift at the rate of upwards of a demi-myriameter an hour.

About one o'clock in the morning of the 25th, the Isle of Man bore west south-west, at the distance of a demi-myriameter.

A thick fog concealed from us, during the whole day, the high mountains of New Ireland ; only a few of the summits shewed themselves from time to time, and we saw towards the centre of the Island some mountains, two thousand meters in perpendicular elevation. Large trees were distinguishable on the most lofty brows.

At four o'clock in the afternoon we brought to, in order to reconnoitre Sandwich Island the next day ; but the currents drifted us during the night with so much rapidity, that at daybreak on the 26th we were greatly astonished to find ourselves within about four hundred meters of this island. The people stationed to look out were probably asleep, for they did not apprize us that the currents were setting us on this coast, which, although at so short a distance, fortunately presented no sort of danger.

Sandwich Island is not very high land ; like New Ireland, it is clothed with trees ; a few old trunks, after having lost part of their branches, were seen scattered here and there on the hillocks.

Being

Being covered with lianes or parasitical plants, they resembled so many columns ornamented with garlands, and added much to the picturesque aspect of this charming island.

New Ireland, which is opposite to Sandwich Island, offers also to the view lands of no great elevation. I there observed, rising from the middle of a vast plain, a few hills, of from four to five hundred meters in perpendicular height.

Sandwich Island is terminated to the north-east by several points which form so many hummocks, stretching out into the sea: of these we distinguished five principal ones; one of them has towards its base a mountain in the form of a peak, and this is the most elevated spot in the whole island, although it is not more than from four to five hundred meters in perpendicular elevation: it is consequently not near so high as Carteret mentions. The clearness of the weather, and the short distance at which we were from this little mountain, enabled us to judge of its height.

A few huts, under the shade of the forests of cocoa-palms, made us hope for an interview with the inhabitants of Sandwich Island; but it was no doubt too early in the morning for these savages to come and pay us a visit, for we saw not one of them.

The

The westernmost point of this island is in latitude $2^{\circ} 59' 26''$ south, and longitude $148^{\circ} 29' 15''$ east. It is three myriameters in its greatest length from east south-east to west north-west.

We remarked off its west point an islot, which Carteret had not perceived.

Ten days had now elapsed without our having been able to get a meridian observation; but on the 26th of July we observed at noon, in the latitude of $2^{\circ} 50' 29''$ south, our longitude being $148^{\circ} 16' 50''$ east; which enabled us to determine the position of the north and the westernmost point of New Ireland, at $2^{\circ} 44' 30''$ south latitude, and $148^{\circ} 11' 30''$ east longitude. The darkness of the weather had deceived Carteret, who had laid it down two myriameters more to the northward.

About four o'clock in the afternoon we were at the distance of three kilometers from a great number of islots, situated at the mouth of the channel which separates New Ireland from New Hanover, and we saw that the passage between these two islands was barred by reefs.

New Ireland is terminated by some low lands.

New Hanover exhibits, towards the north-west, a flat country, while its centre is occupied by some very high mountains, the chain of which extends to the south-east.

On

On the morning of the 27th we got sight of the Portland Islands, along which we ranged very close. They form a group composed of seven islets, which occupy a space of a myriameter and a half in extent, in a direction from east to west. They are very flat, covered with large trees, and, to all appearance, are connected with each other by reefs and sand-banks.

These islets are in the latitude of $2^{\circ} 39' 44''$ south, and longitude of $147^{\circ} 15'$ east.

On the 28th we continued to direct our course towards the Admiralty Islands, where Commodore Hunter, according to the account of two French Captains, had thought that he perceived some vestiges of La Pérouse's unfortunate expedition; and we stood to the southernmost island of this little Archipelago. Like the greater part of the islands in the South Sea, this is guarded by reefs, at no great distance from the shore.

Although we were only two kilometers from the land, we found no bottom with a line of fifty fathoms.

We there saw to the south-east a few canoes, going along between the reefs, but not one appeared inclined to clear them to come out to us. We also distinguished some groups of savages standing on the most prominent points of the coast, in order to enjoy better the sight which our ships afforded them.

• A large

A large tree, drifted on the breakers, was at first taken by some of us for part of the wreck of a ship; but the branches and the roots, which we distinctly perceived, left no doubt of its being a tree, detached from the coast.

The Admiral sent an officer on board of the *Espérance*, in order to concert with her Captain, respecting the researches which it was incumbent on us to make at the Admiralty Islands, in consequence of the information that had been transmitted to us at the Cape of Good Hope.

Night came on; we spent it in making short boards, in order to hold our own against the currents.

The next morning, the 29th, Captain Huon waited on the Admiral. It was decided that we should go and visit the island that was in sight, to the east north-east of that which we had just coasted. In fact, according to one of the depositions which had been transmitted to the commander of the expedition, it was at the easternmost island that the savages clothed in the uniform of the French navy had been seen. About the middle of the day we were at the distance of a myriameter from this island, when we saw some natives advancing towards the sea-shore. A few huts were distinguishable through the cocoa-nut trees. Other islanders presently made their appearance on the south-east point;

and

and their number increased as we advanced towards them. Several canoes were hauled up on the sands, and we hoped to see some of them launched into the water, in order to come off to us ; but the natives made no dispositions for approaching. As the Admiral wished to have an interview with them, we stood on, and brought to under the lee of the island, where we found but very poor shelter, for it is of little extent. The savages appeared in crowds : some ran along the beach, while others, with their eyes fixed on our ships, invited us by signs to come on shore : their shouts were the expressions of joy. A few of them launched a canoe : they hesitated for some time about coming towards our ship ; but as the *Espérance* was more to windward, they steered towards her. This little canoe had an outrigger, and carried seven natives, who returned on shore immediately.

At half past one o'clock we brought to, and a boat was dispatched from each ship with different articles, which were to be distributed to the inhabitants of this small island. While these boats were approaching it as near as they possibly could, the ships kept within reach to protect them, in case of an attack on the part of the savages ; for the treachery of the inhabitants of the southernmost of the Admiralty Islands, towards Carteret, left us some uneasiness respecting the intentions

intentions of these. This navigator informs us, that the savages twice attacked him with their arrows, notwithstanding all the marks of friendship he had lavished on them, when, in September 1767, he explored the southern part of this Archipelago *.

We observed that this island was cultivated to its very summit. Different plots of ground, enclosed by palisades, made us think that the right of landed property is not unknown to its inhabitants. The whole of the island presents the form of a small and tolerably round mountain, the foot of which is adorned with fine plantations of cocoa-palms, while the elevated spots seemed appropriated to the culture of various roots, which also serve for the nourishment of the inhabitants.

The boats having gone within a hundred meters of the coast, found no bottom with thirty-three fathoms of line; the reefs by which it is guarded, prevented them from approaching it any nearer.

A great number of the natives advanced on that side; we already saw upwards of a hundred and fifty employing all sorts of means to persuade us to land on their island; but the reefs opposed

* See Hawkesworth's *Collection of Voyages*, 4to edition, vol. i. page 382, and following. T.

an obstacle which we could not overcome. These islanders having thrown us a few cocoa-nuts, their astonishment was succeeded by the most lively joy, on seeing with what facility we opened them by means of a hatchet.

A savage, distinguished from the others by a double row of small shells with which his forehead was ornamented, appeared to enjoy a great deal of authority. He ordered one of the natives to jump into the water, and bring us some cocoa-nuts. The fear of swimming out unarmed to persons with whose intentions he was wholly unacquainted, made this islander hesitate a moment; but the chief, little accustomed, no doubt, to meet with any resistance to his will, did not allow him time to reflect; he very closely followed up his orders by some blows on the belly, which he himself gave the man, who was obliged instantly to obey. We did not expect to see any one treated in this manner in the midst of a tribe that had seemed to us so nearly bordering upon a state of nature. In order to console the poor fellow, there were given to him a few bits of red cloth, some nails, and a knife, which he received with the greatest joy. As soon as he had landed, curiosity assembled all the others round him; every one would have a share of our presents; some canoes were immediately launched; a great many other natives swam off

to

to our boats, and, in a short time, they were surrounded by a vast concourse. We were astonished that the violence of the surf, and that of the sea dashing against the breakers, had not prevented them from leaving the island.

Another chief, who was distinguished by the same ornaments as were worn by him I have before mentioned, was also distinguished by the blows which he dealt out with his stick to several of those to whom he gave his orders.

These islanders, who testified the greatest joy at the sight of our nails, and, above all, of our hatchets, had some difficulty in conceiving the full value of our knives. At first they required that they should be shut before they accepted them; but their fears were very soon banished, and they then received them as well open as shut. We got from these inhabitants a few darts armed with a piece of volcanic stone cut to a point, and very sharp at the edges. They also gave us some combs with three teeth standing very wide apart, some heavy bracelets cut out of a large shell, and other bracelets formed of little whelks strung on a cord, the strength of which was equal to that of our best hemp.

These savages frequently repeated the word *capelle*, in asking for our articles of traffic. It appeared to us, that they gave this name to iron,

iron, which they preferred to every thing that we could offer them.

Like the natives of Bouka, they repeated with much correctness the French words which they heard us pronounce.

One of their canoes, which was driven by the sea against our barge, received some damage; but instantly a man belonging to our boat, held the canoe, to prevent her from receiving a second stroke; when one of the chiefs, mistaking his intentions, cautioned the paddlers to be on their guard, and most of them precipitately abandoned her, jumping overboard, to swim on shore to the island: they were almost immediately undeceived, and confidence was re-established.

The women kept apart at a small distance, under the cocoa-nut trees; their whole clothing consisted of a piece of mat round the waist.

The men were eager to get near our boats: some swam off, holding up the cocoa-nuts which they brought, others seemed attracted by mere curiosity; but it was very soon perceived, that curiosity was not their only motive, as they exerted all their dexterity to get possession of our property. Impunity augmented their audaciousness; and when they missed their aim, they were not discouraged, but presently made a fresh attempt on some other article.

One of these thieves had just laid hold of a

knife; but he was caught in the fact, and prevented from carrying it off: his want of success was not sufficient to make him renounce his enterprise; nor was he a loser by having been dilatory. A flag, in which red was the predominant colour, attracted his attention; he found means to get possession of it, and he was not discovered till he was already a good way from the boat, and near landing on the island.

A looking-glass having been given to one of these savages, he viewed himself in it with surprise, and very shortly broke it, hoping, no doubt, to find again in the plate the form of the objects which he had just perceived.

These islanders have not a very black skin: their countenance is agreeable, and differs little from that of the Europeans. Born under a fine sky in a fertile island, they seem happy, if a judgment may be formed from the air of satisfaction which was painted in all their features; they have curly hair, and are, doubtless, in the habit of leaving no hair on any part of the body but the head. It appears that the volcanic stone, with which they arm their arrows, serves them also to shave with; for, seeing one of our boat's crew who wore whiskers, they made signs to him to cut them off with this sort of agate.

The boats were ordered to return at four o'clock. Their departure seemed sensibly to af-
feet

fect the natives, who redoubled their entreaties to make us land on their island. All the women then advanced as far as the beach, and joined their invitations to those of the men: they were, no doubt, greatly astonished at not having better success; but the orders were given, and our boats could not defer their departure.

It was with regret that we quitted the savages at the moment when they were launching into the water several canoes loaded with cocoa-nuts, which they were bringing us. The delicious juice of these fruits would have been of the greatest utility for stopping the progress of the scurvy, which was already beginning to make ravages on board of our two ships: had our boats been allowed to wait a few minutes, we should have procured a great number.

The pleasure with which these islanders received nails and other articles of iron, and the eagerness which they displayed to obtain them, proved to us that they were acquainted with this metal.

These people shewed at first every appearance of honesty; but they were not long in betraying their inclination for theft, as soon as they were almost certain of committing it with impunity. We had occasion to remark, that the oldest of them were the most daring thieves.

This little island, which is nearly of a circular form,

form, and about a demi-myriameter in length, is in latitude $2^{\circ} 18'$ south, and longitude $145^{\circ} 46'$ east. It is extremely well peopled, for we saw there near three hundred inhabitants.

The whitish appearance of several spots in the island where some earth had fallen in and discovered the soil, made me think that its base is of a calcareous nature, like the greater part of the islands of the South Sea.

As soon as the boats were hoisted in we steered east by north.

The next day, the 30th, we stood to the northward of the Admiralty Islands. We there saw a mountainous and pretty extensive island occupying the centre of this group, the outlines of which are formed of a great number of flat islets, which seem to have recently emerged from the bosom of the deep. They are almost all linked to each other by reefs and sand-banks.

At sunset we were a myriameter and a half to the north-east of the islets nearest to the principal island.

On the 31st, as soon as the day broke, we steered west south-west, to draw in with the land. In the distance were seen some canoes, which by the tauntless of their masts and the spread of their sails appeared to be much larger than they really were.

We were under the lee of these islands, in a
very

very extensive cove formed by their shores, and we kept at about three kilometers from the coast. We sounded several times with a line of sixty-eight fathoms without finding bottom.

We perceived a great many cocoa-palms on most of the islots. A vast concourse of natives had come down to the shore, and some advanced as far as the adjacent reefs. The islots where we remarked no cocoa-nut trees seemed to be uninhabited, for we did not see on them a single person.

Several canoes were launched, a great many were still on the beach, and six which had just set their sails directed their course towards us. We immediately brought to, in order to wait for them: some were conducted by seven men, and others by nine. Having got within the distance of six hundred meters of our ship, these savages took in their sail, and made use of their paddles, to come still nearer to us. Each canoe was under the orders of a chief, who, from the middle of a platform on which he stood up, directed all its movements. As soon as these canoes had advanced about three hundred meters by paddling, they stopped, and from this distance one of these chiefs raised his voice and made a speech to us: his eloquence was quite lost; but the signs which he made left us no doubt that he was inviting us to come on shore. The paddlers, probably, were

not allowed to speak, but they joined their signs of invitation to those of their chief.

We endeavoured on our side to prevail on them to come nearer to our ships. They could not resist the sight of some large pieces of red cloth, and after having appeared to hold a council, they advanced a little.

Some of the officers, imagining that the sound of the bell would be agreeable to them, the bells of both ships were immediately set a going ; but, as several persons had foreseen, this noise, instead of attracting the savages, made them take to flight : however, various flags which we waved about, and a few tunes which our fiddler played, determined them to come back towards us.

In hopes that presents might gain their confidence, we had just thrown to them an empty bottle, and we fully expected that they would lay hold of it as soon as it was near them, but they doubtless considered it as a fatal gift, for they looked at it only to get out of its way.

Some nails and knives fastened on a plank which was lowered down to them, gave rise to shouts of joy, when the savage who untied them held them up to the rest : these natives therefore know the use of iron.

None had yet ventured to touch the bottle ; but the presents which they had now received gained us their confidence, and one of them went and took

took possession of it, after having, with a piece of volcanic stone, cut the line to which it was made fast.

These natives now made no difficulty in approaching quite close to our ship, without, however, consenting to come on board. By degrees the number of the canoes increased, and traffic was carried on with all possible fairness: we even saw several of these savages, who, having been pushed off from our ship by the great crowd of canoes, before they had been able to pay for the article which they had purchased, made every effort to bring back its equivalent. They assiduously sought for the person to whom they were indebted, and some returned even at the expiration of half an hour, and delivered the value of the goods they had received.

A very remarkable singularity is the use to which they apply the shell designated by the name of *bulla ovum* (see *Plate III.*). They each had one suspended at the extremity of the penis: for this purpose they had made an opening above the most inflated part of this shell, in order to lodge in it the glans: so whimsical an appendage diverted our people exceedingly. These natives made great difficulties in parting with this ornament, on which they seemed to set a great value: in truth, its dazzling whiteness formed a very striking contrast with the blackness of their skin.

I cannot, however, affirm, that ideas of shame had no share in their adopting this fantastical decoration; for when they detached this shell to sell it to us, they failed not to turn about and cover their genitals, by letting down their girdle; but those who wore no girdle, having nothing wherewith to conceal their parts, took off their shell without any ceremony. These people, very different from many other inhabitants of the South Sea, leave the prepuce all the extent which it has received from Nature. It was easy to see that the compression of the shell on the upper part of the prepuce, frequently causes on it a very conspicuous tumour: this tumour is sometimes of a white colour, the reticular texture of the skin having been destroyed in consequence of an inflammation occasioned by the compression. It should seem that it is necessary to have attained a certain age to wear this shell, for the only boy that we saw was the only person who wore none.

The great number of canoes by which we were surrounded prevented several from coming near our ship; but some of the paddlers jumped over-board and swam to bring us their articles of traffic. These islanders preferred bits of iron, whatever might be their shape, to every thing that we could offer them; they so well distinguished this metal from every other substance, that even the rust did not prevent them from recognising it.

I imagined

I imagined that habit would have rendered these savages excellent swimmers; but their motions are too precipitate, and differ only in that respect from those of our good European swimmers. They must, however, have made no great efforts to support themselves in the water, for part of their head was sunk in it, so that they were obliged to keep their mouths shut: several supported themselves by the motion of their feet alone, while they were fastening to the end of our lines their articles of exchange.

If we may judge of the disposition of these inhabitants by their conduct towards us, their manners are extremely mild; an air of good nature was depicted in their features. Far different from the savages of the little island which we had visited two days before, they gave us marks of the strictest probity. It is astonishing to meet with so much difference in the manners of savages at such a short distance from each other, and who are equally bordering on a state of nature. Their opposite behaviour towards us, proceeded, perhaps, from the inhabitants of the little island having had to deal only with boats, while the latter trafficked with ships, which kept them in awe.

The chiefs of each canoe generally made the paddlers give up the articles which they received from us. We saw with much concern that they sometimes employed force to get from them

our presents. One of the paddlers had just received a small piece of red serge, and he was so tenacious of his bargain that he would not part with it to one of the chiefs, till the latter had compelled him to do so by giving him a sound drubbing.

At the same moment, in another canoe, one of these islanders was treated by a chief in a manner equally harsh, because the poor fellow, being intent in gazing at our ships, neglected to bale out the water which the canoe was shipping.

The savages who jumped overboard to come and exchange their goods for ours, formed a competition which, ere long, excited the jealousy of those whose canoes were near the ship: the latter took the greatest care to preserve their place; they tried to keep off the swimmers, and did not permit them to rest themselves on their canoes: the former being obliged to swim continually to bring us their articles of exchange, gave a great appearance of bustle to this singular place of traffic.

These natives, like those we had seen two days before, valued our nails much more than our knives.

Several held in their hands calebashes of different shapes, filled with lime, reduced to a very fine powder; others preserved their lime in joints of bamboo: one of them, who had a spoon in the form of a spatula, filled it with lime, and holding it

it up to us, doubtless with an intention of extolling its good qualities, made great motions with his mouth, at the same time swelling out his cheeks prodigiously, and seemed to wish to persuade us that this lime produced a very agreeable sensation.

Another chief had a small bundle of the leaves of the pepper-tree called *piper siriboa*, Linn. They probably chew it with the cashew-nut, for we did not see in their mouth any of the traces which accompany the mastication of betel. Besides, we remarked these articles of luxury only in the hands of the chiefs, to whom they seemed exclusively reserved.

A few of these savages wore bracelets cut out of large shells, among which I recognised some sea-ears smooth in the middle and on the margins.

The greater part had their ears bored, and different shells fastened to them; it is the inferior lobe of the ear, which, after having pierced it, they are in the habit of distending so prodigiously, that it hangs down lower than the shoulder, as may be seen in *Plate III.* It appears that it is by means of elastic rings introduced into these holes that they produce so great a distension. The boy of whom I have already spoken had two of those rings in his ears.

Their hair is curly and of a black colour; they reddens it frequently with ochre mixed with oil;

occasionally they turn it up with a binder made of the bark of trees. Their skin, which is of a light black, is sometimes painted with red in different parts of the body, and especially the face.

We saw in their possession neither bows, nor clubs, but only some darts from a meter and a half to two meters long. (*See Plate XXXVIII. Fig. 25.*) The volcanic stone with which these were armed was sharp on each edge, and its whole length was three fourths of a decimeter: this agate was fixed at one of the ends of the dart, where it was fastened by means of a cord covered with a species of mastic.

This weapon must be dangerous among a people who wear no clothing. Their skin, being constantly naked, must, particularly in the parts where it is a little distended, be easily penetrated by so sharp a stone.

Perhaps this volcanic stone is not very common at the Admiralty Islands, for these savages had also other darts tipped with a sharp piece of wood in lieu of agate.

Several had in the septum of the nose a hole bored, through which they had passed a string, at the extremities of which were suspended some eye-teeth, twice as long as those of a man. One of the savages who wore this ornament wished to dispose of it: a chief, in cutting with a piece of volcanic stone the short string to which it was hanging,

hanging; had the awkwardness to wound the native that was decorated with this appendage.

An order which the Admiral had just given had prodigiously deadened the traffic; and yet these natives had still a great many things of which they wished to dispose. One of the chiefs amused us exceedingly with his calebashi filled with lime, all the properties of which he seemed to point out to us with no small degree of ostentation, expecting, no doubt, to turn it to a better account. It would have been no easy matter to imitate, with more address than he did, the gestures of our most attractive vendors of specifics.

We did not see in the possession of these islanders any effects which had belonged to Europeans. As our people had almost done purchasing, they quitted us to go towards the *Espérance*, carrying with them the remainder of their commodities.

Their canoes, which are made of the trunk of a tree hollowed out, and its sides raised with planks, are not more than two thirds of a meter in their extreme breadth, by ten meters in length: planks placed across internally, support their sides, and form so many partitions, at the bottom of which the paddlers sit, near the extremities of the canoe.

These canoes have an outrigger about four meters long, and which extends laterally nearly the same

same distance. On the opposite side is another outrigger, which does not dip into the water, and which is two meters and a half in length: it serves to steady the sail; the chief fits on it sometimes, but he most commonly remains on a platform made like a grating, which covers the whole extent of the upper part of the outrigger.

The sail is made of matting, and has the regular shape of a square, the sides of which are four meters in length: two cylindrical spars of the same dimensions, and by which it is bordered on the two opposite sides, supply the place of a yard. When this sail is trimmed for going on a wind, one of its diagonals is always situated vertically, and one of its angles extends upwards of a meter beyond the height of the mast, which is six meters long. The wind operates powerfully on so taunt a sail, and gives to these canoes an impulse, which makes them divide the water with astonishing rapidity.

Sometimes these savages, when they wish to go slowly, do not make use of their masts; they then raise to the height of about a meter and a half, in a horizontal position, one of the sides of their sail, while the remainder is stowed on the canoe; but, in this manner, they can sail only before the wind.

Their paddles are very broad in the blade, and have a handle about two meters long. They use

use them as our sailors do their oars: the paddle acts as a lever of the second class, the fulcrum of which is the gunnel of the canoe. A savage placed near the stern steers with his paddle.

After having remained lying to till half past ten o'clock in the morning, we continued to follow the coast, which, in its direction towards the west, is constantly bordered by islets connected to each other by reefs. We remarked beyond these reefs several places for catching fish, made with stakes fixed in the water at a certain distance from the beach; they resembled those which we afterwards saw at the Moluccas.

As soon as we had filled, the canoes made sail in order to accompany us. We admired the celerity with which this flotilla skimmed along the water. Although it blew pretty fresh, these little vessels greatly outsaile our ships.

Quite close to a fishing-place, much larger than those we had just seen, were seventeen canoes, which immediately began to paddle towards us. We brought to, in order to wait for them; but as, notwithstanding our invitations, they kept at the distance of a kilometer from the ship, we made sail again, steering west by south.

At the close of the day two canoes put off from the coast, and directed their course towards us. It was dark when they got within hail. One of the chiefs immediately spoke to us in a very loud

loud tone. It may be proper to remark, that all these natives have a very shrill voice. As it was almost calm, we endeavoured to attract them to our ship; but they would not venture to approach near enough to receive our presents.

It was imagined by some of our officers, that a sky-rocket would afford them a great deal of pleasure; but it was quite the reverse: this sight served only to frighten them, and they made off with precipitation.

Notwithstanding the darkness of the night, these two canoes returned, taking advantage of our top-light. We sent them a few articles of hardware, fastened to a plank, on which was fixed a lighted candle. This light, which we were visibly leaving, fixed their whole attention; but they durst not approach within three or four hundred meters of it, and they kept away from our ship. We were highly amused at hearing the two chiefs for a long time addressing their discourse to the candle. They spoke with much warmth, thinking, no doubt, that some of us were coming towards them with this light. Probably wearied out by a silence which formed so singular a contrast to their loquacity, they set off, at the expiration of two hours, towards their island. During all this time we had observed fires lighted on the shore, perhaps to indicate to these canoes the place where they were to land.

We

We continued lying to during the whole night.

The next day, the 1st of August, we saw the western extremity of this little Archipelago, which is about nine myriameters in extent from east to west. The westernmost islot is in latitude $2^{\circ} 11' 36''$ south, and longitude $143^{\circ} 47' 38''$ east.

Reefs and sand-banks extended beyond it a full myriameter and a half towards the south-west.

We presently saw some other reefs, which occupy an extent of a myriameter from east to west: they lie in the latitude of $2^{\circ} 13'$ south, and their longitude is $143^{\circ} 40'$ east.

During the night we stood under an easy sail to the west north-west.

At break of day we got sight of the Hermits Islands discovered in 1781 by Don Francisco Antonio Maurelli, in the Spanish ship of war *La Princesa*, who came within about five myriameters of them. Their high lands seemed, at a distance, to leave between them intervals sufficiently great to afford a passage for ships; but ere long we discovered their low coasts stretching out into the sea; and we distinguished the reefs by which they are connected.

This little Archipelago is composed of thirteen islots, in the midst of which, as at the Admi-

rality Islands, lies a principal island, whose extent from south-west to north-east is about three myriameters. The islets which surround it on all sides, except to the south, are very small and very low.

We were two kilometers to the northward of these islets, and to leeward of the northern point of the great island, when we perceived some canoes under sail; they were behind the reefs, between which we saw no break that afforded them the means of gaining the open sea, and we thought that they could not clear this barrier; but having come quite close to it, the savages began by taking in their sail, and getting into the water, they carried their canoe over these shoals, in order to reach the offing.

The canoe which led the way immediately steered towards us; the others, five in number, followed close after her. We hove to, in order to wait for them; but, as our people were rather slow in their motions, the *Esperance* being astern of us, became the nearest to them, and they stood towards her: at first these savages kept at about the distance of two hundred meters from her, after having displayed much intelligence in the management of their sail. All the means that were employed to attract them on board were useless; they came near enough however to throw upon deck a few of the fruits called *spondias*

dias cytherea, and several others of different species of *eugenia*, all very good to eat. The bottles and the bits of cloth which we gave them, diffused among them the most lively joy; but we remarked with surprise, that they set little value on iron.

Like all the other savages that we had hitherto met with, these earnestly expressed a wish to see us land on their island.

One of the canoes advanced towards us, while the others stood in for the coast. Notwithstanding our invitations, these natives kept at three hundred meters from our ship. They were afraid to touch the different articles which we sent them, with a view of gaining their confidence. Some, however, appeared to wish that their canoe should come near enough to lay hold of them; but the sentiment of fear prevailed among the greater number.

It was noon when we trimmed our sails, in order to continue our route. All the canoes then resolved to follow us for some time, before they returned to their island: the one that had come the closest to our ship, followed us with the most perseverance: this was a very large canoe, containing thirty savages, who appeared to us stouter than the inhabitants of the Admiralty Islands; they were of the same colour, and still more naked; for we saw but a single one of

them that was adorned with the shell, which the inhabitants of those islands wear at the end of their prepuce.

These natives had advanced towards us with very pacific views, for they had no arms; and from the *Espérance*, which ship they had approached nearer than they did ours, none had been perceived, even in the bottom of their canoes: perhaps they had imagined that, by pursuing this method, they might induce us to come on shore.

These canoes, although similar in appearance to those of the Admiralty Islands, are not near so good sailers; that which came near us had then only one sail, but she set one abaft, in order to keep up with us: this other sail was much smaller than that set forward, and they were both in the form of a rectangle, one of the sides of which was almost twice the length of the other; they set them in the manner of the lug-sails of our boats. Their large sail, which was as taunt as that of the canoes of the Admiralty Islands, came down much lower, and was considerably squarer.

The group of the Hermits Islands, including the reefs, is about seven myriameters in circumference. The middle of these islands is in latitude $1^{\circ} 35' 38''$ south, and longitude $142^{\circ} 41'$ east.

We

We found ourselves in the evening quite close to the easternmost island of the little Archipelago to which Bougainville has given the name of *L'Echiquier* (Chess-board). It is very low, and only five myriameters to the west south-west of the Hermits Islands. Some reefs which bar the access to it in the north-west, form a large basin, where it appeared to us that a ship would find sufficient water to anchor.

A great number of other islands were seen from the north to the west.

We carried little sail during the night, making short boards, in order to keep to windward of these islands.

At daybreak on the 3d, the easternmost island of the *Echiquier* bore south, distant a demi-myriameter: it lies in the latitude of $1^{\circ} 29'$ south, and longitude of $142^{\circ} 26'$ east.

We then stood to the westward, and, by eight o'clock in the morning, we had reckoned thirty small islands from the east north-east to the west south-west.

We steered towards that which seemed to us the most westerly, and approached it within the distance of a demi-myriameter: it is situated in latitude $1^{\circ} 34'$ south, and $142^{\circ} 10'$ east.

All these islands are connected to each other by reefs, which seem to leave no passage. Their lands are very low, and covered with lofty trees.

As we stood on we saw new islands, and we at length discovered the south-westernmost island of this little Archipelago: it is in latitude $1^{\circ} 39'$ south, and longitude $141^{\circ} 58'$ east. This is not joined to the others by reefs.

We spent the night lying to.

The next day, the 4th, we descried towards noon a low and very woody island, the extent of which is about a myriameter and a half. This new island lies in the latitude of $1^{\circ} 31'$ south, and longitude of $140^{\circ} 47'$ east.

We afterwards discovered another much smaller to the south-west of the former, from which it is three myriameters distant: this latter island is equally low, and is covered with large trees.

It is impossible to behold without astonishment, on the low lands bordering on the equator, the rapid and vigorous growth of these trees, to which the atmosphere furnishes at once superabundant heat and excessive humidity.

Although we had been for some days quite close to the line, and the heat was suffocating, the thermometer on the 7th had risen only to $24\frac{1}{2}^{\circ}$.

We saw floating some large trees that had been torn by the waves from the low lands. One of these trees, which had stuck to the bows of our ship, for some time deadened our way.

At five o'clock in the afternoon of the 8th we

we were under the equator, in the longitude of $135^{\circ} 40'$ east, when we saw, at the distance of one third of a myriameter, a very considerable water-spout forming to the south-west. Although the air was perfectly still around us, the sea was agitated and frothy at the spot where the water-spout originated. A very small cloud was stationary at a few decimeters above the place whence it rose. This water-spout had the form of two very elongated cones, united at their summit; the base of one of these cones rested on the sea, that of the other was lost in a very thick cloud.

The clouds seemed to me agitated by a whirlwind, which, collecting a great quantity of water, was pouring down in torrents: perhaps all water-spouts are formed in this manner. If, as many natural philosophers assert, a water-spout sucked up the water of the sea in a great volume, this water ought to be as salt at the time of its fall, as at the moment of its elevation, which by no means accords with experience: a person worthy of credit, who saw two fall on board a ship, assured me, that they had constantly discharged fresh water. In the contrary supposition, this phenomenon is easy to be explained.

The limpidity of the sea-water was changed during the whole day of the 9th by a *fucus*, con-

fishing of very short and very stringy filaments, which I again met with on the 6th of September, when I shall speak of it more at length.

Sharks are very numerous in these seas. Several were taken of the species the most widely diffused (*Squalus carcharias*). There was one of these of a middling size, which astonished us by its voracity. Although pricked by four different hooks in less than half an hour, it followed us till it suffered itself to be caught.

Being abreast of New Guinea, within eight minutes of the equinoctial line, the thermometer stood at no more than 25° , although we experienced an intolerable degree of heat, far more violent than that felt in Europe, with the same elevation of the thermometer. In recalling to mind that this instrument is an incorrect measure of the sensible heat, I must observe; that I am still speaking of a mercurial thermometer graduated according to Reaumur's scale.

On the 11th, the *Esperance* had like to have run foul of us for the fifth time since our departure from Europe. The fluke of our anchor hooked the horse of her sprit-sail yard: fortunately we succeeded in keeping the two ships clear of each other by means of a boom, which was immediately placed between them. As it was calm, two boats were hoisted out, in order to tow the ships away from one another: these boats

boats then discovered the direction of the currents, which set us to the north north-east, at the rate of half a knot an hour.

On the 12th, at daybreak, we got sight of the largest of Schouten's Islands, which bore south by east.

The surface of the sea was violently agitated throughout a great space, where the *Espérance* was going to pass in following the course she was steering: Captain Huon was afraid that this might proceed from breakers, and put about; but the illusion presently disappeared. This motion was occasioned by a very considerable shoal of fishes, which were rising to the surface of the water: they were followed by a great number of birds.

Although this was the period of the east monsoon, yet, for the last four days, the wind blew from the south-west to the north-west; but it backed round to the south-east on the 14th of August.

The same day we got sight of a small island, very contiguous to New Guinea, and two myriameters and a half to the eastward of Providence Island; it lies in the latitude of $0^{\circ} 18' 48''$ south, and longitude of $133^{\circ} 8' 47''$ east.

The continuance of the violent heat in these seas, accelerated the decomposition of our water: this circumstance was the more unpleasant,

as that to which we were reduced was a little brackish; for the first casks that were taken on shore at Carteret's Harbour were filled much too near the sea, and this water had not been started, notwithstanding its bad quality. Besides, not to lighten the ship, it is customary to fill with salt water the empty casks, as soon as the fresh water, which they contained, has been expended: this renders it necessary to clean them well when it is wished to fill them with fresh water; but the captain of the hold, to whom this business was entrusted, seldom took so much trouble; it was easy, with the machine which I have already mentioned, to deprive the water of its inflammable air, but it still retained a brackish taste.

During part of the night of the 18th, the wind had roared over the lands of New Guinea, and had sent us a great deal of rain. The sky seemed to announce a tempest; but the storms near the equator have a far more menacing aspect than they are in reality dangerous, and it was not long before we enjoyed very fine weather.

We saw, stretching from east to west, a fine chain of mountains, the most lofty of which appeared to be at least fifteen hundred meters in perpendicular height: the large trees with which they were covered, added, in a peculiar degree, to the beauty of the landscape.

On

On the 19th, being in the latitude of $0^{\circ} 18'$ south, and longitude of $130^{\circ} 52'$ east, and at two kilometers distance from New Guinea, we sounded with a line of a hundred fathoms, without striking ground.

The first indications we had of this country being inhabited, were two fires, the smoke of which we saw rising from the foot of the large trees situated near the coast.

We were at this time not far from the Cape of Good Hope of New Guinea, which we doubled, at the distance of two kilometers. It is in latitude $0^{\circ} 20'$ south, and $130^{\circ} 34'$ east. We were astonished that Forrest, in other respects a very accurate navigator, should have been so greatly mistaken with respect to its true latitude; that which he has given differed from ours, by being more than a third of a degree to the northward.

The easterly variation of the compass, after having gradually diminished, was now no more than a degree and a half east.

Being detained by the calms, we were waiting in order to range along the coast of New Guinea for the sea breeze, which did not spring up till about three o'clock in the afternoon. The banks of the shore were, for the most part, perpendicular. I remarked, however, a few spots, the gentle declivity of which afforded a small sandy beach, where it would have been easy to land.

In the course of the morning of the 21st we were very near the two little islands of Mis-palu. The smallest is in latitude $0^{\circ} 20'$ south, and longitude $130^{\circ} 7'$ east; and the largest lies in latitude $0^{\circ} 19' 57''$ south, and longitude $130^{\circ} 4' 30''$ east.

On the 23d we ran very close along the shores of New Guinea, in the intention of entering among the Moluccas, by Watson's Strait. It would have been an agreeable circumstance to us to explore this Strait, which is much less frequented than those that lie farther to the westward. We should, besides, have had the advantage of keeping more to windward, than in going through Pitt's Strait, which the continuance of the southerly winds induced us to stand into.

About eleven o'clock in the morning, being to the north-west, and quite close to its opening, we found ourselves on a shoal, which stretches out from the coast of Batanta upwards of a myriameter into the offing. We had already run pretty far over it when the lead gave us eight fathoms water, with a rocky bottom. It was a bank of coral, all the whiteness of which the limpidity of the water allowed us to distinguish. We were obliged to put about, in order to extricate ourselves from this dangerous situation.

We entered the Strait about half past two o'clock in the afternoon. A canoe, which we perceived

perceived at its entrance near the Batanta coast, appeared to us for a moment to direct her course towards the Espérance; but she soon returned to the shore.

Having brought to for some time to wait for the Espérance, we remarked that the currents carried us pretty rapidly through the Strait. As the tides have much influence on these currents, they slackened considerably towards midnight, and early the next morning.

Five canoes were coasting along the east shore, at a good distance from each other. We remarked one of them that had hoisted a flag, which we took for Portuguese colours. The wind carried us close to the Salwatty coast, and prevented us from standing towards them; besides, none of them appeared inclined to come near us. These savages knew not our intentions; perhaps they were apprehensive that we were some of those Europeans who are induced, through cupidity, to employ every means of enticing them on board in order to make slaves of them.

Pitt's Strait is skirted by high land, covered every where with large trees.

We continued lying to the whole night, and at nine o'clock in the evening we heard, towards the west shore, the voice of some natives, who seemed to be addressing themselves to us. A fire appeared at the same time, on the west point of

the

the entrance, near the place from which a canoe had put off, at the time of our arrival in the Strait.

On the 24th, at daybreak, we were quite close to Passage Island, and we perceived on the Batanta coast, a small village, whence came out a few inhabitants, who appeared to view us with much indifference.

Pitt's Strait, the length of which is about five myriameters, from west south-west to east north-east, is a myriameter in its mean width. When we tried for soundings, we could not strike ground with a line of a hundred and twenty-five fathoms; but the boat which sounded within two hundred meters of the coast, found bottom at the depth of from fifteen to eighteen fathoms, with calcareous rocky ground.

We put about to avoid some shoals, which lie at the outlet of the Strait, very near to the Batanta coast. Several persons, however, were of opinion, that there was a sufficient depth of water for our ships to go over them.

The opening of the Strait on this side is near three myriameters wide: we here remarked two iflots very near the Batanta coast.

The west point of Salwatty we found to be in the latitude of $1^{\circ} 2' 10''$ south, and longitude of $128^{\circ} 32'$ east.

The

The constancy of the south south-east winds deprived us of all hopes of doubling the island of Mysol to the eastward. We were therefore obliged to determine on making the land to the northward of Ceram, in order to shape our course to the westward from that island to Amboyna.

At six o'clock in the afternoon we were at the distance of three myriameters from Popo Island, which bore south 6° west.

The next day, the 25th, we coasted it, leaving it on the starboard hand, at the distance of a myriameter and a half: it exhibits a flat country, from the middle of which rise three small mountains close to each other. A few islots were seen very near it, to the south-west. This cluster occupies an extent of near three myriameters from north-east to south-west.

Popo Island is in latitude $1^{\circ} 9' 14''$ south, and longitude $127^{\circ} 40'$ east.

We saw Kanary Island, Mysol Island, and part of the islots which surround them.

In the forenoon we lost a young sailor, named Pichot, who died of a marasmus, the consequence of a dysentery, to which he had been subject for the last six months.

On the 26th, the position of Kanary Island was fixed at the latitude of $1^{\circ} 51' 36''$ south, and longitude of $127^{\circ} 35'$ east.

In

In the course of the day of the 27th, the ship was surrounded by twenty-seven whales, which were six or seven meters in length: they were sufficiently numerous to afford adventurers, by the oil which may be extracted from them, an ample return for their expenses.

Very early in the morning of the 29th we discovered the high mountains of Ceram, which extending from south-east to south south-west, presented to us a very beautiful aspect.

So high mountains must ensure the independence of the inhabitants; and indeed there is but a very small number of natives settled on some of the lowest points of the island, quite close to the sea, who submit to the yoke of the Dutch.

On the 1st of September, the clouds being entirely dispersed from above the lands of Ceram, we enjoyed the grand prospect of several chains of mountains, parallel in their direction from east to west. The charming vallies which separate them, afford a very vigorous vegetation, and have every appearance of the greatest fertility.

Several fires were lighted on the island of Ceram: we perceived a fire upon one of the highest mountains, which proves that their summits are frequented by the natives. This mountain appeared to us to be at least two thousand four hundred meters in perpendicular height.

We

We availed ourselves of the calm to hoist out a boat, in order to try the current, which then set to the north-east by east, three quarters of a mile an hour. As among these islands the currents depend much on the tide, it may well be conceived that their direction and their strength vary exceedingly.

On the approach of night we were about two kilometers from the coast of Ceram, the less elevated lands of which seemed to announce no great depth of water; however, on sounding, we could get no bottom at thirty-two fathoms.

It was not long before we saw, pretty close to the shore, different fires, which appeared to us kindled above the water by fishermen, in order to attract the fish.

Towards noon on the 2d, we saw the Island of Bonso, extending from west 20° south to south 48° west, at the distance of near four myriameters. This island is in latitude $2^{\circ} 58'$ south, and longitude $125^{\circ} 56'$ east.

We took care to sound very frequently when we were near the land, but we could not strike ground with a line of sixty-five fathoms.

A strong land breeze carried us, in the early part of the night, into the channel which the island of Ceram forms with that of Bonso. We there remarked three islets by the light of a bright

moon. It was calm, and the currents drifted us almost to the other extremity of the channel.

About midnight, the air being scarcely agitated, the sea, which immediately became frothy not far from our ship, made us apprehend that we were near some breakers; but this sea very soon reached us: it was a rapid current occasioned by the tide, and which, following the direction of the channel, counteracted our progress.

On the 3d we were at a small distance from Kilang. The Admiral intended to run between this island and that of Ceram; but the channel, besides being very narrow, appeared to us barred by reefs and a sand-bank; for this reason we passed to the westward of Kilang, along which we ranged very close. The country offered to our view beautiful plantations of cocoa-palms and plantain-trees, in the midst of which was built a charming village.

We then shaped our course between Kilang and Manipa.

About eleven o'clock in the morning a tide-race occasioned some waves, which followed in quick succession, being impelled by each other. We were in the sequel repeatedly witnesses to this phenomenon, which Bougainville and Dampier compare to the very rapid stream of a large river.

By

By four o'clock in the afternoon we had doubled the Island of Manipa, which is not more than a demi-myriameter in extent, from north to south: although very mountainous, it appeared to us well peopled; a great many canoës were coasting along the shore. This island is in latitude $3^{\circ} 21'$ south, and longitude $125^{\circ} 47'$ east.

The Island of Kilang lies in latitude $3^{\circ} 17'$ south, and longitude $125^{\circ} 31'$ east.

A sea breeze, which sprang up about ten o'clock in the morning of the 4th, favoured our progress to the southward, and we soon saw the west coast of Amboyna to the south south-east.

Being afterwards thwarted by a southerly wind, we were under the necessity of plying.

On the 5th a fresh breeze from the south-east deprived us of every hope of reaching the anchorage in the course of the day. The situation of our scorbutic people, which was daily becoming more alarming, and the number of whom was increasing with rapidity, made us long for favourable winds: the continual rains at Carteret's Harbour had had the greatest influence on their disorder; almost all of them felt very acute pains in the loins.

One of the first symptoms was the sudden appearance of whitish tubercles, frequently of the bigness of a hen's egg, on different parts of the

body, and particularly on the arms: these infiltrations generally preceded those of the lower extremities.

It is remarkable that these patients had not their skin covered with those spots which are called scorbatic blotches; the scurvy, in hot countries, penetrating with rapidity the cellular tissue of a lymphatic humour, which scarcely changes the colour of the skin.

I also observed, that although salt meat is one of the principal causes of the scurvy among seamen, yet we had on board two of the ship's company, who were violently attacked by it, without having eaten any: one of these worked in the hold; and the noxious air which is there inhaled, together with the great humidity of that part of the ship, is likewise a powerful cause of this disorder.

We made some stretches, which brought us sufficiently near to the west extremity of Amboyna, to allow us to enter the roadstead during the night. We kept along the east coast, at the distance of a kilometer, taking for our guide the plan of it, published by Valentine.

As soon as we had got beyond Portuguese Bay, we brought to, in order to wait for daylight, that we might be enabled to discover the place where we intended to anchor.

The Espérance had not been able to get to windward

windward as rapidly as we : at seven o'clock in the morning of the 6th, she was still a myriameter to the south-west, when we were already at no great distance from the principal settlement on the island.

I again saw the *ficus* which I had before met with quite close to New Guinea ; it resembles very fine oakum cut in small shreds, about three decimeters long, and consists of filaments as fine as hair. These were frequently seen collected in bundles, and so numerous that they coloured the water in the road.

Admiral D'Entrecasteaux sent his second Lieutenant to wait on the Governor of Amboyna, in order to ask permission to put in to the island. The Governor immediately assembled his council, and granted us leave to anchor ; but as the act which the second Lieutenant of our ship presented to them, in the name of the Admiral, had not yet been addressed to them by the regency of Batavia, they wished to annex to our stay, conditions to which it was improper for us to subscribe. However, it was not difficult to make them sensible that we had anticipated, by several months, the arrival of the accounts from Europe, which seldom reach them till eighteen months after their date. It appeared to us that they took so many precautions only to screen themselves from all censure on the part of the

regency of Batavia, of which the government of Amboyna is a dependency; for as soon as they had gone through the necessary formalities in this respect, they rendered us every service in their power.

We found in this little island the means of supplying our ships, much better than we had ventured to hope, with every thing that was necessary for continuing our voyage.

A captain, belonging to the Dutch East-India Company's service, was sent to us by the Governor, to shew us the place where we were to anchor; and after having made several boards, we came to at half past one o'clock in the afternoon, in twenty-seven fathoms water, the bottom muddy sand; the tower of Fort Victory bearing east 9° north, the nearest redoubt west 35° south; and the west point of the entrance of the road west $26\frac{1}{2}^{\circ}$ south. We were about two thirds of a kilometer from the landing-place, which is a wooden slip, and quite close to which large ships may anchor. There was then here a Company's ship, taking in her cargo of cloves.

In the road were eighteen vessels, all under Dutch colours. Of all these there was only one three-masted ship; most of the others were brigs and sloops.

The *Esperance* anchored half an hour after, to the north-east of us.

CHAPTER VIII.

Stay at Amboyna.—One of the boys belonging to the *Recherche* is drowned in the road.—A visit to the Governor.—Various excursions into the interior of the island.—One of the naturalists falls dangerously ill.—Description of his disorder.—Agreeable juice of the sago-palm.—Sugar extracted from it.—Use of different parts of this valuable tree.—Means employed by the flying lizard to support itself in the air.—Matai which preserves the harvest from pillage.—A Dutch sailor conceals himself in the woods for fear of going to Batavia.—A very dexterous manner of catching the cancer *carcinus*.—Houses of the natives of Amboyna.—Their dress, &c.—Their method of procuring fire; their manner of fishing during the night.—Culture of the nutmeg-tree and of the clove-tree.—A long bamboo cut so as to give, in a fresh breeze, very agreeable sounds.—Fishing-places of the inhabitants.—Sago-palm.—Extraction of its pith.—Cutaneous disorders common at Amboyna.—Various observations respecting the island and its inhabitants.

AT half past three o'clock we saluted the fort with nine guns, which were immediately returned gun for gun.

The Admiral had invited all the officers to accompany him, at five o'clock in the afternoon, to pay a visit to the Governor. Knowing nothing of this arrangement, I went on shore with some persons belonging to our ship, in order to stroll about the town : it is surrounded by gardens, where the principal culture is that of trees, because they favour the indolence natural to man under a burning sky, by yielding him, in profusion, delicious fruits, which require scarcely any other trouble than to gather them.

Besides the wild species of bread-fruit tree which is here met with, we were told that there was another that bore fruit, all the seeds of which are abortive ; but this fruit is of a middling size, and the tree does not produce it in any great quantity.

Different varieties of plantain-trees, and a great many species of orange-trees, were growing in these delightful gardens ; the guava, the custard-apple, and different species of *annonæ*, here yielded their exquisite fruits. I also remarked a few trees of henné (*lawsonia inermis*), which rose to the height of three or four meters.

Various odoriferous plants were here scattered with profusion. I met with the *chalcas paniculata*, the *michelia champaca*, the *tsciampaca*, and several species of *uvaria* : the Arabian jasmine, the *nyctanthes sambac*, rising among these charming trees,

trees, blended their sweet odour with so many delicious perfumes.

On returning to the town, one of the ministers of the protestant religion invited us to come into his house. He set before us several sorts of spirituous liquors; but water perfectly limpid, and newly brought from his spring, was the most agreeable beverage to persons who for a long time were reduced to brackish water, and lived only on salt meat. This worthy clergyman appeared greatly astonished at having regaled us at so cheap a rate. He informed us that earthquakes were frequent at Amboyna, and that within a few years, one, in particular, of unusual violence had been felt: it had been accompanied by a hurricane, which lasted near three days: and, during all this time, the sea had exceeded its limits, and inundated the country where the town is situated.

It is at the change of the monsoons that this scourge is most to be dreaded, and particularly at the beginning of the west monsoon, which takes place in these seas in the month of November.

Gabriel Abalen, one of the boys belonging to our ship, who was appointed to attend on the warrant officers, disappeared in the evening of the 7th: he had been seen on board the whole day; but, about dark, they called him several

several times in vain. This youth, who was of a very mild, and at the same time temperate disposition, had nevertheless drunk, in the course of the day, a sufficient quantity of spirits to excite the most lively inquietude respecting his fate. He might have fallen overboard, and it was well known that he could not swim.

We all had the greatest occasion to remain on shore in order to recover our strength; and the Governor consented to our taking lodgings in the town.

It was of no small importance to the naturalists to be known to the Governor of Amboyna, that they might have every opportunity of prosecuting the researches which constituted the object of their mission: it was, no doubt, through mere forgetfulness, that the Admiral had suffered us to remain ignorant of the hour of the first visit which he had paid him. I requested that he would have the goodness to introduce us, and we set off about half past ten o'clock to go to the Governor's. M. Bourguellés and M. Van Smiehl readily undertook to act as our interpreters.

M. Van Smiehl was a German Baron, lately arrived in the island. He was at present, as he told us, only aspiring to become one of the Company's servants. We congratulated ourselves in the sequel, that he had not yet much influence

influence over the Governor; for he had endeavoured to persuade him that the regency of Batavia would not approve of permission being given to our ships to make any stay at Amboyna. And yet, the Baron knew very well, that a year before, two small English vessels, dispatched from Bombay for the Pelew Islands, had been received here without the smallest difficulty. They had, at first, put into Bouro, where, not having found provisions, they had come and taken them in at Amboyna; and these vessels were very far from having the same claim as we: perhaps the unexpected appearance of foreign ships in this road, for two successive years, required that the Governor should take every sort of precaution, in order to cover his responsibility: he received us in the best possible manner. We were really concerned that he had, on our account, put on his full dress; he was almost suffocated with heat under a very heavy black velvet coat: such a dress is extremely inconvenient near the line; but the Dutch Governors wear it because it is a prerogative of their office.

Some refreshments were served up. I wished only for water, and I poured out some of that which appeared to me the clearest; but its salt taste induced me to believe that the servants had made a mistake, and presented me with some medicinal

medicinal water. It was Seltzer water, which the Dutch are here in the habit of drinking, as a very agreeable liquor ; it costs them as dear as the best Rhenish wine. Certainly our repugnance for this beverage was not foreseen ; however, it might well have been supposed, that, under a burning sky, after a long privation of fresh meat, we should not have much inclination to drink salt water.

The Admiral proposed to introduce us also to the members of the council, and we accepted his offer : they all received us in a very handsome manner.

As we were to stay at Amboyna a month at least, I was obliged to have brought on shore, to the place where we were to lodge, a great many articles necessary for the preparation of the different productions which I purposed collecting in the island. The other naturalists and I having agreed to live in the same house, we had had it set in order, and our baggage was already arrived there, when, to our great astonishment, we found it occupied by some officers belonging to the two ships, who, however, were not ignorant that we had hired it : the man who had the key of it had thought that he was delivering it to us when he gave it to them. This unhandsome trick, of which we should not have supposed them capable, diverted them exceedingly ;

ingly; but it was easy for us to find another lodging.

Our fears respecting the lad, who had disappeared three days before, were but too well founded: he had remained during all this time under water, and it was not till about half past two o'clock in the afternoon of the 10th that he was discovered beginning to float near the ship. His remaining so near the place where he had fallen overboard seems to demonstrate, against the opinion of most of the Europeans settled at Amboyna, that the currents in the road are not rapid at the bottom of the water, but only at its surface: and, indeed, this appears to me very probable. The currents being occasioned by the tides, the waters neither flew in nor run out of the road but in order to establish their equilibrium, which, in these circumstances, is deranged only at a small distance from their surface.

This young man was much regretted by all the ship's company. Several exclaimed against the inattention of those who, having brought him up in his infancy, had neglected making him learn to swim. In fact, a few lessons of swimming might have saved the lad's life. It were to be wished that this event may serve as an example to others; for, I have seen with astonishment, that many seamen could not swim.

Our

Our observatory was established the same day, towards the west side of the town. As this place was not within sight of the ship, the astronomers experienced the inconvenience of being obliged to go to the sea-side in order to compare the rate of the watches with that of the chronometers.

The west end of the town, where we also lived, forms the quarter inhabited by the Chinese; there were in it few natives of the island, and only one Dutchman. All the other Dutchmen resided; either in the centre of the town, or towards its east side.

We were become so weak, that at first we were obliged to content ourselves with making a few excursions to a short distance from the town.

We visited the Company's garden, which contains nothing remarkable but a very convenient bath, where the Governor went regularly every three or four days. This bath is supplied with very clear water, which runs down from the neighbouring hill. There is another bath close to it, for the use of the women.

The Dutch at Amboyna are in the habit of bathing every three or four days. On those days they carefully avoid exposing themselves to the great heat, which lasts from eleven o'clock in the morning till three in the afternoon. It is even

even very uncommon for them to go out on other days during this time. As for us, we had not leisure to take such precautions; and hence two of the naturalists were attacked by very violent disorders.

We endeavoured several times to penetrate into the middle of the large plantations of sago-palms; but the waters which wash the foot of these palms frequently forced us to return as we went: this tree, which is so conducive to the nourishment of man, forms part of the wealth of the island.

The beach, at low water, was covered in many places with a great number of crabs, of the species called *cancer vocans*. They had then quitted the holes which they had dug in the rather solid ground. This singular species of animal, one of whose claws is sometimes bigger than the body, often becomes the prey of the birds. I am of opinion, that the facility with which it sheds its claws is the reason why one of them is almost always much larger than the other.

A little excursion which we made to the south of the town, near the quarter inhabited by Europeans, procured us a sight of the tomb of Rumphius. The simplicity of this monument reminded us of the simplicity of the manners of this able observer of nature: his tomb was surrounded

rounded by the pretty shrub known by the name of *pana fruticofum*.

We saw in the possession of the natives of the island the beautiful lory of the Philippines: however, they do not get it from so great a distance, but from some islands not far to the eastward of Amboyna, and principally from the Arow Islands. They also had another lory, which is found in the forests of Amboyna, and which differs from the former by its colours being less bright and much less shaded; almost all these parrots can repeat a few words of the Malay language.

Towards the middle of the day, the burning sun gave us so violent a head-ache, that it most commonly forced us to seek some shade to protect us from its rays.

Very early in the morning of the 15th we went to the westward; but the heat was so oppressive about noon, that it obliged us to return to our lodging.

The naturalist who performed the duty of chaplain fell so dangerously ill, that we could not quit him a single moment for four successive days. The malignant fever, by which he was attacked, had frightful symptoms. His excretions, which were extremely fetid, were accompanied by vomitings, *subsultus tendinum*, a very low pulse, and a great prostration of strength.

The

The nervous affection was carried to so high a degree, that, at each evacuation, the patient experienced fainting-fits, during which he was perfectly insensible. The lower extremities were affected by violent spasms, occasioning the most acute pains.

Although this malady was very contagious, no danger could prevent us from paying our companion all the attention which he had a right to expect from our friendship: accordingly we gave up all thoughts of continuing our researches in natural history till he was out of danger.

The following day, the 16th, the symptoms became still more alarming. The pulse more and more languid, with great intermission, the hiccough, which frequently lasted near ten minutes, a great prostration of strength, and a face quite distorted, made us apprehensive for the life of the patient.

The night was equally alarming.

On the 17th, about daybreak, the pulse visibly began to mend; a little softness in the beating of the artery was the forerunner of a copious perspiration which came a few hours after, and rescued our friend from the jaws of death.

His convalescence lasted not more than a week.

This species of fever, occasioned by the stagnant waters under a burning sky, was treated with demulcent drinks and antispasmodics. Ether, given very frequently, and in small doses, was of great advantage in supporting the powers of life, by diminishing the violence of the symptoms.

M. Hoffman, surgeon of the military hospital, came to see the patient several times in the course of the day. Our own surgeon also attended him.

M. Bourguellés, treasurer of the Dutch East-India Company, had persuaded the commander of our expedition that the united knowledge of the physicians of Europe was not, in similar disorders, equal to the science of a Malay doctor. One of the most skilful had been called in: it was not by internal remedies that he wished to effect a cure, for he gave the patient nothing to take; but after rubbing the skin a little in different parts of the body, and chafing the lower extremities, he pronounced, with a mysterious air, some words which he seemed to address to the Supreme Being; he then, as he told us, laid the evil spirits, whom these islanders consider as the cause of disorders. M. Bourguellés was transported with joy to see that this physician did his best in order to obtain some success. We suffered him to proceed as long as we saw that no bad consequences could result; but it was necessary to

to stop him, when, taking a pail of water newly drawn from a well, he prepared to inundate the patient. This was precisely a little time before the critical sweat, which was so salutary to him.

The Malay doctor, no doubt, exerted all his skill ; but he was ignorant that he might thus check the critical perspiration of which the pulse had given the consolatory presage.

Our patient being sufficiently recovered, on the 19th, to dispense with such assiduous attendance, we walked into the country to the westward.

Having for some time followed the banks of a little river, which discharges itself into the roadstead at no great distance from the town, we were returning loaded with fine plants, when, on the approach of night, we met with some natives who had been successful in fishing, and were preparing to broil their fish. We had the pleasure of seeing them kindle a fire by means of two pieces of bamboo rubbed one against the other, and cut in the manner which I shall presently explain.

On the 20th we employed half the day in an excursion to the southward, and we were not long before we reached a hill, where we found some young natives, who had just spread their nets to catch birds : these consisted of hairs disposed in a running knot, and fastened to a very

long string, which rested on the ground, and was confined to a small piece of wood fixed in the earth.

I presumed that they made use of some allurement to attract the game, but they told me that they employed none; and indeed they acknowledged that they caught few birds.

We saw rising from the foot of the hills some fine palms, which the natives call *sagouer*, and which Rumphius has described under the name of *saguerus*.—*Vol. I. Fig. 13.* From the peduncles of their freshly-cut branches was distilling a very agreeable liquor, which was received in pieces of bamboo attached to their extremity. Under so hot a sky this liquor ferments very quickly, and would soon become acid, if the inhabitants did not know how to employ opportunely the wood of the *soulamea*, which loses almost entirely its great bitterness by fermentation, and renders this liquor capable of keeping for a length of time.

One of these palms can furnish, for upwards of two months in the year, six or eight liters of liquor a day. Care is taken to renew the incision of the peduncle daily, in order to facilitate the distillation.

The heat of the sun promoting the rise of the sap, we should be inclined to think that this tree ought to yield a greater quantity of liquor

in the day than during the night: the contrary, however, is the case; because the humidity of the night, which is absorbed by the leaves, mixes with the sap of the palm, and favours the distillation; but the liquor that is procured during the day contains a great many more extractive saccharine particles than that which drops during the night.

This extract is a species of sugar, which the Malays call *goula itan* (black sugar): it is commonly in little loaves, which are in the shape of a hemispherical vase, when the evaporation of the superfluous water has taken place. It is nearly of a chocolate colour, but rather deeper. When these little loaves are broken, there are to be seen, particularly towards their centre, yellowish and shining grains: this makes it presumable, that it would not be difficult to bring them to the degree of crystallization necessary for their becoming a sugar of good quality: such as it is, the natives scarcely employ any other; that of the sugar-cane costing seven or eight times the price.

We should be tempted to imagine, from so exclusive an use of the *goula itan*, that the sugar-cane does not grow on this island; the inhabitants, however, cultivate that valuable plant; almost all of them have some in their gardens,

but they content themselves with enjoying their juice which they express by mastication.

Besides the property which this beautiful palm possesses of yielding an agreeable and wholesome liquor, the petioles of the leaves are furnished near their base with filaments, of which the natives make very good ropes. From the shape and blackness of these filaments, they would, at first sight, be taken for horse-hairs, although they are almost twice as thick. The young fruits, preserved with sugar, make an excellent sweetmeat.

Some of the earth having fallen down near the foot of the hills, exposed to view a hard steatite, of a bright gray, which forms their base.

In an excursion which I made to the south-east, on the 22d, I found several rocks of very soft *schistus* of a light gray colour, and, near at hand, some very hard *asbestos*.

It might naturally be supposed, that in an island so near the equator, the preservation of the specimens of natural history would be singularly favoured by a quick desiccation. However, the contrary happened, and I was under the necessity of taking great pains not to lose the fruit of my harvest in botany. In fact, the air, in passing over the sea, becomes charged with a great humidity, which is very prejudicial to preparations

parations of this sort, and the heat of the climate very quickly destroys such of these articles as imbibe it too long.

On the 23d, we set out at four o'clock in the morning, on an excursion to the eastward.

We were obliged several times to cross the pretty rivulet known by the name of Vai-Tō-mon, which emptied itself into the sea at a small distance from the east side of the town: its banks were covered with a great number of plants, among which were seen several species of *jussiaea*. I remarked, on the surface of its waters, that which is designated by the name of *jussiaea tenuella*: I admired the providence of Nature for the preservation of this *végetable*: large tubercles of an oval form, and filled with air, are disposed along its stalk, in order to buoy up the plant: these *véscicles* differ little from those with which most fishes are provided; only each *véscicle* is here composed of a great number of blisters, because it was necessary to secure them against the destruction, which would involve that of the plant, when they happen to be rubbed by the different bodies that are carried away by the stream.

Notwithstanding the shade of the neighbouring trees, the *elaeocarpus monogyrus* was covered, even down its lower branches, with beautiful flowers elegantly crenated. In these solitary *forêts*, through the thick foliage of which the sun

does not easily penetrate, we remarked with astonishment the brilliancy of the colours of several species of parasitical plants of the family of the orchis, for the most part adhering to the trunks of the biggest trees. In the more open spots, we saw rising the tree of the family of the *araliæ*, designated by the name of *cussonia thyrsiflora*, whose large palmated leaves constituted the ornament of these woods.

Among the great number of lizards engaged in the pursuit of insects, I admired the nimbleness of that which is called the flying lizard (*draco volans*, Linn.): it was during the greatest heat of the day, that this pretty animal was darting with rapidity from branch to branch, extending two membranes, in the form of wings, by means of which it supported itself from time to time in the air. Nature having denied it the muscles necessary for flapping these sorts of wings, it can only spread them in order that they may counteract the rapidity of its fall. It gives itself with its hind feet an impulse, which, without preventing it from descending, sometimes carries it several meters: for this purpose it raises itself to a height nearly equal to the distance of the point to which it wishes to fly.

On my return I wished to cut some branches of different plants, cultivated in a garden belonging to one of the natives of the island; but those

those who accompanied us apprized us of the danger to which they thought that I should expose myself : they shewed me a small shed, and repeated several times, with an air of respect mingled with fear, the word *matai*, before our interpreter came to explain to us, that by this term, which signifies a dead body, they meant to designate the former possessor of this garden, who had been buried under the little shed that we saw. These inhabitants have a persuasion that the soul of the deceased wanders round those places, watching to preserve their produce for the present proprietor : they believe, that any other person who should possess himself of it would die within the year. This opinion is so generally diffused, that it seldom happens that a native, in such circumstances, ventures to touch the property of another ; and the *matai* is a bugbear which almost always secures the crop to the lawful possessor.

The Admiral went on board to muster the ship's companies ; on this occasion he gave several of them a step.

My collections were now so numerous, and required so much attention, that I passed almost all the 24th in preparing them ; but next day Citizen Riche and I went up the river called *Batou Ganton*, which discharges its waters into the roadstead to the westward of the town. It is confined

confined in a pretty deep bed which it has formed itself between hills often difficult to climb. We purposed to ascend this river as high as possible, endeavouring to follow closely its banks; but their steepness made us resolve to cross the water, which was seldom more than a demi-meter in depth.

We had scarcely proceeded a few yards when we met a Dutch sailor, who had deserted from a large ship loaded with cloves, which was on the point of sailing for Batavia. The dread of falling a victim to the contagious disorder, so fatal to Europeans, when they remain there even for a short time, had determined this unfortunate man to conceal himself in the woods until his ship had sailed. We pitied his lot, little foreseeing that the abode which he so much dreaded was reserved to us for the termination of our expedition.

On the banks of this river grew in abundance a new species of *begonia*, remarkable for the minuteness of all its parts.

A beautiful granite of a fine grain formed the base of these hills: quartz, which is generally whitish, we found here sometimes coloured by green ficate, and at other times by iron, which gave it the colour of rust. Mica was disseminated in a pretty regular manner; schorl of a black

black colour was to be seen in rather small *spicule*.

Our guides availed themselves of the opportunities, when we were collecting specimens of natural history, to lay in a stock of the species of cray-fish called *cancer carolinus*, which is very plentiful in this small river: their manner of catching it gave us a good idea of their dexterity. This cray fish generally seeks its food in the clearest places; it passes over them slowly, but as soon as any person approaches, it runs away with extreme swiftness. These natives had however fallen on a method of taking great numbers of them; and it is by one of the eyes that they lay hold of them: for this purpose having fastened to the end of a rod a horse-hair, on which they made a running knot, they get the animal into their possession, by passing in this knot the fibre which serves as the base of the spherical part of the eye. When they missed their aim, the cray-fish seldom failed to return, and in the end almost constantly allowed itself to be taken.

Having in a short time expended all our provisions, we were in hopes to be able to purchase from the natives as much as would last us during the rest of the day. It was now three o'clock in the afternoon, and we proceeded with confidence to a small house near the bank of the river; but, what was our astonishment when, on asking

asking for any thing, we had no other answer than *trada*; and it was the mistress of this little habitation who thus expressed her having nothing that we wished for; we took good care to assure her, that we should pay punctually for every thing with which she should furnish us. We were the more astonished at this pretended scarcity, as the appearance of these inhabitants bespoke abundance. I learnt in the sequel, that these peaceable natives have not always reason to congratulate themselves on the proceedings of the Europeans, who are the masters in their island. They considered themselves justified in not trusting to our promises: however, some glasses of arrack, and a few articles of hardware, which we opportunely distributed among them, procured us their confidence.

They invited us to sit down under the shed formed by a continuation of the roof of the house: the cray-fishes of the little river were set before us in profusion. They roasted for us sweet potatoes and yams, and our beverage was the slightly fermented wine of the sago palm. This liquor, which when newly extracted from the tree is called *sagouer mouda* and *aer saguero mouda*, is much more agreeable than cocoa-nut juice. The young girl, who took the trouble of preparing our repast, joined to a very agreeable face, and a charming person, an air of frankness which added

added much to the interest she inspired: as soon as she had brought us some fruit, she went immediately and sat down behind her mother, and thence only she cast some looks at us, to satisfy her curiosity.

We found the purest gratification in this frugal repast: our reflections on the life of a person who undertakes long voyages, added still to the idea which we formed of the happiness of these islanders, whose wants Nature has supplied with so liberal a hand.

The construction of their houses is adapted to the fineness of the climate, and their lightness makes it necessary to dig only as far as the rock in order to lay the foundations.

As they never experience a severe season, the walls are so constructed as to leave a free passage to the air: these consist of palisades, generally formed of the stems of bamboo, placed very close to each other,

Our hostess's house, which stood on a spot of ground four meters long and three wide, instead of bamboos, had its sides formed of the petioles of sago-palm leaves, which though placed very near one another, nevertheless left some interstices, by which the external air had a free access into the habitation.

These petioles, although extremely light, are very solid, as they are covered with a very hard bark.

bark. The inside of them is filled with a fungous substance, which the inhabitants use by way of cork. All this dwelling had been built of the sago palm, even to the roof, the ridge of which, raised about three meters, was covered with the leaflets of this valuable tree; they had been bent and fixed upon a long stick, and in this manner formed rectangles, often all the length of the house, by two decimeters in breadth: being placed tile-fashion over each other, they were impervious to the heaviest rains.

The two sides of this roof were inclined about forty-five degrees, and part of it formed, towards the entrance of the house, a small shed or porch, intended as a cool retreat. Here also was prepared their food; for the want of a chimney would have rendered the house uninhabitable, had a fire been lighted in the inside.

I was surprised to see these people, who are so fond of ease, lie on a sort of lattice of sticks, placed at the distance of a demi-decimeter from each other. This bed was very hard, notwithstanding the mats that covered it, but they there enjoyed the freshness of the air, which circulated freely through the interstices. It was raised about a demi-meter above the ground: under it were deposited a part of the household utensils, which consisted of three earthen pots, of the manufacture of the country, intended for dressing their

food, a few bottles of a prismatic shape, which they had purchased from Europeans, and some spoons formed out of the large shells that are common at Amboyna. Among these shells I distinguished various species of *nautili*, often the mother-of-pearl *nautilus*, and also a species known by the name of *pinna rufis*.

I observed also under this bed, a pickaxe, and a large knife in the shape of a butcher's cleaver, and which, in the Malay language, is called *pissau*: these two instruments had been procured from Europeans.

From the mildness of the climate, the inhabitants require little clothing; and indeed their wardrobe consists of a garment, barely necessary to conceal what decency does not permit to be exposed.

A pair of drawers, which generally come no lower than the middle of the thigh, or a piece of blue cloth fastened round the loins, is the only clothing of the men employed in agriculture.

The dress of the women is of course more expensive: they wear a sort of chemise of the same kind of cloth, which reaches to the middle of their leg, and is fastened by a girdle round their waist.

Our presents had excited their gratitude. The young girl, having disappeared for a moment, came back to offer us some fragrant flowers:

a thread

a thread was wanting to tie them into nosegays : we were witnesses to the quickness with which the natives contrive to procure threads from the bastard aloe, called *agave vivipara*. The master of the house went immediately and cut a branch of this plant, and resting it on his thigh in order to scrape it with his large knife, and take off its pulp, he obtained from it a fascicle of threads as long as the leaf and as strong as those of our best hemp.

On our return we met a slave whose decrepitude excited our curiosity ; it was to no purpose that we asked him how old he was, he could not satisfy us, for he knew nothing of his age : it appeared to us surprising that he should not know the number of years that he had passed in slavery.

On the 27th I went up the roadstead in a canoe with a double outrigger. Some of our sportsmen took this opportunity of proceeding quickly to the eastward of the town, and joined our party. We followed the right hand shore of the road, at a small distance from the coast : the water was so limpid that we could see, at the depth of three or four fathoms, a white bottom composed of *mudreporie*, on which we perfectly distinguished a species of ray remarkable for large circular spots of a light azure blue, and several other fishes of the most brilliant colours. Among

our

our paddlers we had a Papua, or New Guinea man, who had the dexterity to strike several. Standing at the fore-part of the canoe, and holding in his hand a dart of bamboo armed with an iron point, he threw it with force as soon as he perceived any fish; the dart, by reason of its lightness, immediately rose up from the water in the same direction, so that after having penetrated to a great depth it came back to the Papua man, who rarely failed to lay hold of it again, although we still kept going on.

When we had got three kilometers from the town, we admired the charming situation of a country-house belonging to the Governor, at the foot of the mountains, the chain of which terminates by a gentle declivity, at no great distance from the roadstead.

A small house, inhabited by natives, erected half way from the coast, and surrounded by clove and plantain trees, added in no small degree to the beauty of the landscape.

The bottom had become exceedingly shoal; and although our canoe drew scarcely more than two decimeters of water, we were nevertheless obliged to keep farther off the coast, in order to avoid touching on the rocks.

After having passed some fishing-places, we landed upwards of a myriameter from the town on the right hand shore, near a house, the master of

which gave us as many coca-nuts as we desired. We had with us some seamen, who finding this liquor much too sweet, mixed with it brandy enough to please their taste, and we saw with pleasure that our host did not dislike this beverage. After breakfast every one followed his own inclination. The rendezvous had been fixed at the place where we had just landed.

For my part, I determined to attack the eastern mountains. I followed a path very much frequented by the natives, and left it to penetrate into the woods, whenever any glades facilitated my entrance.

The earth having fallen down in a number of places, left the rock exposed to view, and I perceived that a very hard sand-stone formed the base of these mountains. I had also observed the same sort of stone on the shores of the road-head along which we had just ranged.

I soon gathered a very fine species of compound flower of the *conysa* genus, remarkable, like several species of *melastoma*, for three principal nerves on each leaf: it has so much the port of plants of this last genus, that I should have been inclined to consider it of that class, had I not seen its flower.

The *phalanger* of Buffon (*didelphis orientalis*, Linn.) inhabited the foot of these mountains: I met

met with several which passed within a little distance of me, flying with velocity.

When I had ascended to about three hundred meters of perpendicular elevation, I observed a total change in the nature of the soil. Strata of calcareous stones, of great purity, and perfectly white, crowned these heights, which then afforded me a sight of a great extent of tolerably level ground.

I remarked here a garden surrounded by bamboo palisades, which was extremely well cultivated, although at a great distance from any habitation: I could perceive no possible means of watering it, and yet vegetation was there very vigorous, so great was the humidity of the atmospheric air in these elevated spots. Vast square plots of ground were employed in the culture of a species of pimento called *capsicum grossum*, which the islanders consume in great quantities.

A small shed, erected on the west side of the garden, offered us a shelter; under it my guides, who were dying with thirst, found some very good water in long bamboos, which I imagined were intended for a very different purpose: this water had been brought from the foot of the mountain, and we made use of it as if it had been our own.

Although it was excessively hot, they took it into their head to kindle a fire. I was far from

foreseeing the design of these islanders, who, like the most savage people, take a pleasure in burning the dry herbs which they find in the glades. Presently one of my guides had the imprudence to set on fire a large bush. The air at that time was quite still; but a light wind, which sprang up a short time after, carried the flames to the garden, and I had the mortification to see a part of the palisade surrounding it consumed, without being able to stop the progress of the fire.

The manner in which the natives of this country procure fire, well deserves to be described; it is not so expeditious as a good flint and steel, but they have the advantage of finding almost every where the substance which produces it, for all they want is a bit of bamboo.

This is their method: they split into two equal parts a piece of bamboo a demi-meter long; in one of these pieces they make a longitudinal slit, and shape the other to a sharp edge, leaving it only four centimeters in width. They put some of the scrapings of the same wood in the hollow and underneath the slit of the largest piece, which they place in a horizontal position, with the convex part uppermost; they then introduce the other piece into the middle of the slit, where they have made a notch to receive it, and pressing it strongly they cause it to make the motion of a saw,

saw, when in less than a minute the scrapings take fire.

The loftiest tree of the forests which covered these heights was the *canarium commune*. I saw with astonishment that the calcareous stone was perfectly bare at the foot of these great woods, and that the remains of decayed trees had not yet covered this soil with a bed of mould: it was only to be seen in the clefts of the stones that were split by the weather. These stones resembled vast level spaces of the same nature as those which I had repeatedly met with in our Alps. The numerous cavities which were there formed, seemed to announce that the rains had carried away the most soluble parts.

Being driven from this spot by the smoke of the fire, which was spreading, I proceeded towards the south-east, where I found in the middle of the woods a number of the *nam-nams* of the Malays (*cynometra cauliflora*, Linn.). These trees are here cultivated in the gardens for their fruit, the taste of which is something like that of a rather tart, yet good apple.

After having followed the banks of a rivulet, the waters of which discharge themselves pretty near the places where we had landed in the morning; curiosity induced me to visit a house situated near the sea-shore. I found there an old man, who, contrary to the custom of these islanders,

wore a long beard; he was employed in cooking in a large earthen vessel some whelks which he had just picked up at low water, at the foot of the mangroves near his dwelling. This respectable old man, far from being surprised at my visit, invited me to partake of his repast. A long prickle detached from the petiole of a sago-palm leaf was immediately presented to me, and I followed the example of my host in making use of it to take out of the shell the flesh of the whelks, which he had presented to me on a plantain-leaf.

The helpmate of this old man joined him shortly after, and I should have been very much surprised at the prodigious difference of age between them, had I not been aware that these islanders place their happiness in marrying very young girls. Their countenance becomes peculiarly animated whenever they speak of a young woman (in Malay *paranpouang mouda*); and on the other hand, it is really laughable to see the horrible grimaces which distort all their features when they talk of an old woman (*paranpouang toua*).

I endeavoured to make this worthy old man sensible how very unwholesome it was to live so near the mangroves, where the stagnant waters might occasion him dangerous disorders. It was to no purpose that I endeavoured to persuade him to build another house on a more elevated spot:

spot: all the answer he made was, that the sea-side supplied him with food.

The *nipa* palm grew in the middle of these marshes: its leaflets are very much used for covering houses.

The sportsmen were already arrived at our rendezvous. We were all extremely thirsty, and hoped to procure some cocoa-nuts with as much facility as on our arrival in the morning at the same place; but the proprietor of the garden was absent, and there was no person in the house but his wife. In vain did we entreat her to sell us some cocoa-nuts, offering to make one of our guides climb up the neighbouring trees to gather them; she told us she was not at liberty to sell us any; besides, none of our guides would venture to ascend these trees in the absence of the master of the house, and had he not arrived we should have got no cocoa-nuts; for he had placed at the foot of the trees a *matai*, for which our guides shewed as much respect as for the other which I before mentioned: like the former, it was in the shape of a shed covered by a roof, about two thirds of a meter high, thatched with leaves of the *nipa* palm: this shed was supported by four bamboo posts a demi-meter distant from each other.

From the middle of the roof was suspended a stalk of bamboo, about two decimeters long,

fastened to a cord, and covered with half a cocoa-nut. In this was contained, as I was informed, some property belonging to the deceased who was buried under the little shed. I was given to understand that it was forbidden to touch it, and I complied with their wishes, not choosing to act contrary to the customs of these people.

The sun was near setting when we got into the canoe to proceed to the town ; our Papua man gave us again fresh proofs of his dexterity ; while we were paddling along he struck with his harpoon various sorts of fishes. It was dark when we got back.

Almost the whole of the 28th was employed in preparing and describing the specimens collected the day before.

I had found in this excursion the pretty lizard called *lacerta Amboinensis* ; I observed that it changed its colour like the cameleon ; its most ordinary colour was green, and it frequently turned to a dark brown. Although this lizard runs fast, it was easily caught, for it suffered itself to be approached near enough to seize it by the extremity of the tail, which is of an extraordinary length.

In the evening I walked to the sea-side, to examine the marine productions that are there to be met with, and I prosecuted these researches till

till dark. I saw several fishermen in their canoes, at a little distance from the shore, who were availing themselves of the darkness of the night to attract the fish, by means of fires lighted near the surface of the water. Some bits of wood, placed on the cross-pieces of the double outrigger of the canoes, were burning, which produced a very lively flame. One of the fishermen kept up the fire, and carefully prevented it from catching the cross-pieces of the outrigger, which he could easily do by letting fall into the water any of the bits of wood that could communicate the flame: in the mean time the others were occupied in encompassing in their nets the fish, which were attracted from a great distance by this dazzling light; and we were soon convinced that these islanders were very dexterous fishermen.

On the 29th we set out early in the morning, to proceed to the other side of the roadstead. We had to go by water about six kilometers, and this was a dangerous trip in a canoe, the outriggers of which were not sufficiently strong to make it preserve its balance when so heavily laden. We were very anxious to see the places which we had not yet visited, and we embarked without being aware of all the danger of our enterprise; but we presently found that one of the outriggers became immersed in the water, as soon

as any one of us moved in the least, and but for the greatest precautions we should have overset. If this accident had happened to us near the middle of the roadstead, it would, with the rapidity of the currents, have been difficult for the most dexterous swimmers to have regained the shore. The danger diminished as we approached the place where we were to land; but what astonished us greatly was the imprudence of a servant belonging to the *Espérance*, who, although he could not swim, and was pretty certain of being drowned if we overset, occasioned our canoe several times to lose its equilibrium.

At length we arrived. The skirts of the beach were covered with the shrub called *scævola lobelia*. It thrives on the sea-shore, and I had likewise found it in that situation in New Ireland.

The sea, at high water, came and washed the foot of the very beautiful tree, whose denomination of *heritiæ* recalls to mind the name of one of the most skilful botanists, Citizen l'Héritier.

In advancing to the westward, I found on the beach among the stones rounded by attrition some lava, which although very porous was yet too heavy to float. As I never remarked in the interior of the island any stones that had undergone the action of fire, it is to be presumed that these have been brought into the roadstead by the

the waters which some volcanic explosion have agitated ; for earthquakes are frequent in these seas, and the inhabitants still spoke to us with terror of one, which, twelve years before our arrival in the island, caused there the greatest ravages ; the houses were uninhabitable for several days, and even some of them fell in.

In the island of Banda, which is at a little distance to the eastward of Amboyna, there is an open volcano.

At Karuku, a small island a myriameter from Amboyna, and also to the eastward, there are to be met with springs, the heat of which is so great, that, according to the account of several Europeans, they boil an egg hard in five minutes. The burning vapour that issues from these waters is not prejudicial to the trees which are continually washed by it : they display, on the contrary, a very vigorous vegetation.

The small island of Karuku is chiefly devoted to the culture of the clove-tree.

I found in the gardens cultivated by the natives, a few nutmeg-trees, the largest of which did not exceed seven meters in height, their trunk not being more than two thirds of a decimeter in thickness. They were already shewing a great deal of fruit. The nutmeg delights in the shade of the large trees ; these were sheltered by the *canarium commune*. It is also the same tree that serves

serves them as a shelter in the island of Banda, which is principally appropriated to their culture by the Dutch.

The council of the Dutch East-India Company, which resides at Batavia, finding that the produce of the nutmeg-trees of Banda was sufficient for exportation, and wishing, besides, to suppress all contraband trade in this valuable commodity, ordered, a few years previous to our arrival at Amboyna, all the nutmeg-trees that grew there to be destroyed. This order was executed, and very few escaped; but a hurricane which happened in the same year deranged all these calculations founded on cupidity; it effected at Banda what the council had just caused to be executed at Amboyna.

Orders were then given by the same council to try to repair the mischief which they had done at Amboyna. They wished to re-establish at this place the culture of the nutmeg-tree; accordingly, those which are there met with along the shores of the roadstead are still very young; yet I remarked in several gardens in the town, and opposite the house of the commandant of the fort, some much larger, which escaped the destructive orders issued by the regency of Batavia.

We found the beautiful laurel called *laurus culilaban*, which yields, by distillation, an aromatic

matic oil that is in high request: the natives know how to extract this valuable oil, of which they make an article of commerce.

The largest clove-trees that we saw in this excursion were not above seven meters in height, and their trunk was not more than two decimeters in thickness. The natives are obliged to deliver the produce of them to the Dutch East-India Company for about the hundred and fiftieth part of the price at which it is sold in Europe. We saw a great many which they had spread on mats in the shade of their sheds, in order to dry them properly before they delivered them to the Company's agents. The natives took good care not to expose them to the rays of the sun, which would have taken away part of the essential oil of this excellent aromatic.

Being on the sea-shore, I heard some wind-instruments, the harmony of which, though sometimes very correct, was intermixed with discordant notes that were by no means unpleasing: these sounds, which were very musical, and formed fine cadences, seemed to come from such a distance, that I for some time imagined the natives were having a concert beyond the roadstead, near a myriameter from the spot where I stood. My ear was greatly deceived respecting the distance; for I was not a hundred meters from the instrument: it was a bamboo at least

twenty meters in height, which had been fixed in a vertical situation by the sea-side. I remarked between each knot a slit about three centimeters long by a centimeter and a half wide; these slits formed so many holes, which, when the wind introduced itself into them, gave agreeable and diversified sounds. As the knots of this long bamboo were very numerous, care had been taken to make holes in different directions, in order that, on whatever side the wind blew, it might always meet with some of them. I cannot convey a better idea of the sounds of this instrument, than by comparing them to those of the harmonica.

The trial that we had made of our canoe in crossing the roadstead, had cautioned us to trim it better on our return; the outriggers were strengthened, and we paddled towards the town without any apprehension of being drowned.

I employed a few hours in the course of the day of the 1st of October in visiting the Governor's cabinet of natural history, in which I admired a numerous collection of beautiful butterflies in perfect preservation. I remarked among them a great many double ones extremely uncommon: a large box was entirely filled with the beautiful species called *papilio agamemnon*. I also saw in this cabinet a fine choice of shells,

among which were upwards of twenty screw-shells (*turbo scalaris*, Linn.).

The secretary of the council had likewise great collections of this kind. A taste for collecting specimens of natural history is pretty general among the Dutch; they employ it as a powerful motive of procuring advancement, by presenting them opportunely to persons who have interest in the council of Batavia, or in Europe.

Captain Huon obtained a great many rare shells from the secretary of the council; among others, one of the rarest and most valuable, the glassy *nautilus*, which that officer has, by his will, bequeathed to the Muséum of Natural History of Paris.

The next day, the 2d, we proceeded towards the entrance of the road, following the coast in the canoe which we were accustomed to make use of.

At the same moment the tide coming in with great strength, produced a current which was particularly rapid near the middle of the road. Notwithstanding the skilfulness of our paddlers, we should have gained nothing in struggling against such an obstacle: as its strength was greatly diminished near the shore, we approached the beach as near as we possibly could; the small draught of water of our canoe enabling us to do so with much facility.

I fully

I fully looked for a great diminution of the current near the shore, but I should not have expected to find it so considerable. The principal cause appears to me to depend on the adherence of the water in proportion to its proximity to the land; while farther off, the sea being much deeper, the upper body of water, which forms the current, sliding easily over the lower body, the friction is materially diminished.

When the current is very rapid near the middle of the road, there is frequently none on the shore; sometimes even it there follows a contrary direction, which may be attributed to the different points of land which stretch out into the sea.

We remarked in a bight, on the skirts of a sandy beach, some places for catching fish, formed by an enclosure of bamboos, sufficiently close to each other to prevent the fishes from escaping. The opening by which they entered it was dry at low water, so that those which were brought by the flood could not get out when the tide had a little fallen. Besides, the fishes, which commonly live in deep water, advance towards the head of this enclosure, where the sea, at low water, is still half a fathom in depth. This reservoir afforded fish easy to be caught, and it was not man alone that came here to fish; for I perceived several species of herons. Our

presence

presence had made a few of them fly away; but several others still remained with their long claws deeply buried in the water, and were waiting patiently for some fish to come near enough for them to seize it. These reservoirs are also very much frequented by kingfishers; some of these were perched on the bamboos, and we saw them from time to time dart at fishes, which furnish them an abundance of food.

We presently came to a point of land which advanced sufficiently into the roadstead to have determined the Dutch to erect here a redoubt. It was at this time abandoned, as well as another which we perceived on the opposite shore, and nearer the entrance of the road. We landed at a little distance from this first redoubt, and thence we proceeded to the country-house of M. Hoffman, the head surgeon to the hospital, with whom we were on terms of intimacy.

After having made a hasty breakfast, in which spices were set before us in such profusion as not to allow us to forget that we were at the Moluccas, I went to visit the environs of this habitation, where, among a great number of other plants, some marshy grounds presented to my view the beautiful species of acanthus called *acanthus ilicifolius*, Linn. and its variety the *acanthus integrifolius*.

We afterwards returned to the redoubt, which is not more than a hundred and sixty meters long by a hundred wide, and the form of which, towards the sea, is semicircular; its walls are raised to the height of two meters, and pierced with fourteen embrasures, in each of which is placed a gun; these walls, on the land side, were not above a meter thick, while those which faced the roadstead were at least double that thickness.

Whilst I was on shore, Citizen Riche made our paddlers dive, and they often brought up some very valuable marine productions. The road of Amboyna abounds with beautiful shells, which it is uncommon to meet with elsewhere; the most brittle, being sheltered from the motion of the sea in its various recesses, are frequently found in perfect preservation.

Our Papua man then shewed us, that if of all our guides he was the most dexterous diver, he was also the gayest fellow. His truly burlesque humour highly diverted his companions; he played different scraps of comedy, which he told us afforded the greatest delight to the Papuas: one of those which he repeated the most frequently, because he was sure of general applause, represented a woman who came and lay in on the stage. He availed himself of the time when we were

making

making our meal to regale us with the choicest part of this piece, and he performed his character with critical exactness.

Some of the inhabitants of the South Sea also perform such comedies. Captain Cook mentions that he was present at a similar entertainment at Ulietea, one of the Society Islands *.

I took advantage of the good-humour of our Papua man at this moment, to learn from him in what manner the Papuas went to work to divide the umbilical cord: he informed me, that they burnt it at a third of a decimeter from the navel, an operation which has been practised by some European surgeons. The Papuas make use of a well-lighted firebrand for this purpose.

We again got into our canoe to proceed farther, still following the same shore. A few trees of *erythrina corallodendron* were here distinguishable by their beautiful scarlet flowers.

On the declivity of the sand-stone rocks which formed the steep banks of the neighbouring shore, rose some plants of *vacoua* (*pandanus odoratissima*, Linn.), which overhanging the sea, gave to these places a very picturesque aspect; the large spherical fruits which were suspended at the extremity of their branches augmented

* In the Society Islands this sort of comedy is called *Middidij Harramy*, which signifies the *Child is coming*. For Captain Cook's account of it see his Second Voyage, vol. i. page 166. T.

their natural slope towards the waves. Several fruits arrived at maturity already covered their surface.

These enchanting spots gave us reason to congratulate ourselves on our excursion. After having spent some time in them, we returned to our canoe to proceed again towards the opening of the roadstead.

A charming situation in the vicinity of a dwelling occupied by some natives, determined us to land on the beach. The master of the house was absent; but we found in this peaceful abode a young mother of a family, who, surrounded by her children, was amusing them very much by accompanying her agreeable voice with a stringed instrument of an extremely simple kind; it was a stump of bamboo a decimeter and a half long, covered at one of its ends with a piece of parchment like a drum; three filaments of rattan bark fixed to the two extremities of the cylinder, and each extended by a bridge, formed the strings of this instrument, which was placed across her knees. The two farthest strings produced an octave, and the middle string produced a fifth, with the most distant one. A circle, a centimeter in height at each extremity, served to support other strings, which were intended to render the instrument more sonorous: these strings were stretched more

more or less by means of a brace which confined them two by two, and which was slid up and down at pleasure throughout their whole length, like those of our drums. A small slip of bamboo bark served to make the strings vibrate, which were elevated by the bridges. The accompaniment, although very monotonous, seemed to afford infinite pleasure to our guides, whose ear was accustomed to that kind of music.

This habitation was surrounded by nutmeg-trees of no very forward growth, and yet now in full bearing; although at Amboyna people are not in general very fond of cultivating them. The environs formed a fine orchard, where we could not sufficiently admire the brilliant flowers of the *eugenia Malacciensis*; we there remarked the *averrhoa carambola*, the fruit of which we relished very much from its agreeable acidity.

The skirts of the shore were embellished by an extensive plantation of the species of tree called *æschynomene grandiflora*; its flower, the largest of that of any of the leguminous plants, is commonly of a beautiful white, and also sometimes of a red colour. The natives often eat it dressed, and occasionally even raw as a salad.

The bark of this tree yields a bitter extract, which is administered as a tonic in fevers.

The day was drawing near a close; the tide being against us, we were obliged to keep very

close along the shore, and it was dark when we got back to the town.

On the 3d, as soon as I had disposed, in the fittest manner, of the produce of my last excursions, I went a short distance to the south-east of the town ; I still found some plants to add to my collections. I saw, on my return, a white negro, a Papua man by birth ; he had light hair ; his skin was white, and marked with reddish freckles like those of the Europeans who have red hair ; but he was not weak-sighted, as is generally the case with other Albinoes.

This young Papua, who was a Dutchman's slave, had been a short time at Amboyna. At the moment when I came up to him he was occupied in playing on an instrument, which I was astonished to see among those used by these people ; it was a jew's harp made of bamboo, and cut out of the hardest part of that wood ; it was not quite so large as the iron ones with which we are acquainted. As the middle piece could not be bent to make it vibrate with the finger, a small string fixed to one of the extremities of the instrument served to give it the jar necessary for moving the middle piece, which then gave the same sounds as the iron spring of our jew's harps. He told me that this instrument was much admired by the Papuas.

We had for some days formed a plan of going to

to the country-house of the commandant of the fort, which was situated towards the head of the roadstead ; his son was to accompany us.

Before daybreak on the 4th we were on foot, and it was scarcely five o'clock in the morning when we got into our canoes.

It was not long before we arrived under a shed surrounded by trees, which yielded a salutary shade in so burning a climate ; and these were not an unmeaning decoration to this delightful abode, for they almost all bore excellent fruit. Among the different *annonæ* which were offered us, the best were of the species known by the name of *annona muricata*.

We again stepped into our canoes a short time after our arrival, and we were already near a myriameter from the town, when we passed a point of land beyond which the road extends a great way to the northward.

A fresh breeze from the south-east retarded our progress, and drove against our ticklish canoe a sea which we found extremely troublesome.

At that moment a large boat, loaded with water, was coming out of this bight, where flows a river which furnishes that article for the shipping. She was going on board of the *Espérance*. Water is fetched from so great a distance only because it is much easier to be pro-

cured there than near the town, where, however, very good water is to be had.

The current occasioned by the ebb was contrary to us; but our paddlers redoubled their efforts, and we at length landed near the head of this extensive prolongation of the roadstead.

We walked for some time under the shade of the nutmeg-trees, which were here much more numerous than in all the other parts of the island that we had hitherto visited. These were also young plants.

The son of the commandant of the fort had in this quarter a number of relations. We were very near the house of one of his cousins, who was a native of the island: here we were under the necessity of dining in the manner of the inhabitants: fish, sago, bread, rice, and some fruit, composed our repast. As no spoons were set before us, we were obliged to imitate our host by taking up the viands with our fingers, and nevertheless we ate with a very good appetite.

We all liked the sago-bread pretty well. The fish was highly seasoned with pimento; but a few glasses of *sagouer* water diminished the violence of its effects.

During our repast, we were entertained with music. A sort of spinet served as an accompaniment to a man's voice; a drum formed the bass, and a bass-drum the thorough bass.

After

After dinner, our host carried us in his canoe to the distance of a kilometer to the eastward.

We there saw a man employed in extracting sago from a palm. This tree, which was a demi-meter in thickness, had been recently felled; it was already open part of its length, which, in the whole, did not exceed twelve meters, and a great deal of sago had been before extracted from it. As this species of palm, like the other trees of the same family, preserves nearly an equal diameter throughout, it furnishes almost as much sago in the upper part of its trunk as near its root. (A very exact representation of a young sago-tree may be seen in *Plate XLII. Fig. a.*) Its trunk is formed externally of a very hard ligneous substance, which is not more than a centimeter in thickness. It is a large cylinder filled with a pith, which is crossed throughout the whole length of the trunk with ligneous fibres, about a third of a millimeter in size, and often spread a demi-centimeter from each other.

The sago is pounded after it has been taken from the tree; it is then put into bags made of a sort of canvas, which the petioles of the cocoa-palm leaves furnish near their base. On these bags there is repeatedly thrown some very clear water, which carries through the substance of the pith, while this sort of sieve partly retains its ligneous fibres,

The water charged with the pith is received into troughs formed of the lower part of the petioles of the sago-palm leaves. These troughs are a meter long. At the extremity of each is fixed a sieve, which retains part of the pith that falls, and there remain floating the ligneous fibres that have escaped the first washing.

This sieve had also cost little trouble in the preparation; it was of the same nature as the other, and exhibited a web of crossed fibres, which differed from that of our cloths by the woof being simply laid across the warp throughout its whole length; but a few short fibres which ran from one layer to the other confined the warp and woof together, and formed of them a close substance.

To remove the ligneous fibres that are met with in the pith of the sago, after it has been washed in the bags, it is again run into troughs, disposed commonly to the number of four, one above the other, in order that what has not settled in the first, may be received in the second, and so on with the rest.

The texture of the sago-palm well deserved to be examined; accordingly I cut a stump of it, in which I remarked a grain common to many other palms, as Citizen Desfontaines has so ably described in a memoir on monocotyledonous plants.

On the two following days I could not go far from

from the town, as it required my most assiduous attention to preserve my numerous collections. An intelligent assistant would have saved each of the naturalists a great deal of precious time, which might have been employed in a much more advantageous manner.

But, on the 7th, it was scarcely daylight when we were in the roadstead. We crossed it, proceeding towards its opening, and went on shore near a redoubt, situated at the distance of about a myriameter from the town. At this place the roadstead was full six kilometers wide; and, indeed, an enemy's ship had no more to fear from this bastion, than from the other which I have already mentioned. Their construction is exactly the same, only the one of which I am now speaking is nearer to the entrance of the roadstead.

Quite close to this redoubt, a few houses formed a little hamlet, which exhibited an appearance of neatness that announced the comfortable situation of its inhabitants. The sea furnishes them with an abundant subsistence, and the greater part of its buildings were surrounded by well-cultivated gardens.

Some of these islanders raised poultry, in order to carry them to the market of the town. We accepted the invitation of one of these worthy villagers,

villagers, who insisted on regaling us with new-laid eggs.

Most of the gardens were surrounded by shrubs, among which I remarked the *jatropha curcas*, the plants of which grew so close together as to form good palisades: its seeds have the taste of a filbert, and are far from being disagreeable. The natives cautioned us, that, although eaten even in small quantities, they occasioned a great drowsiness; they were not aware that the narcotic quality of this fruit is seated in the part known to botanists by the name of the embryo. I had the satisfaction of informing them, that, after taking this out, they might eat the kernel in perfect safety. We proceeded into the interior of the country, where we observed several plants of *bixa orellana* cultivated without much trouble.

When we arrived pretty near the entrance of the roadstead, we perceived at a distance several large canoes, which were working to windward, in order to reach it, and saw others which were already near its entrance.

Our little canoe had reached the rendezvous, when the flood occasioned a cockling sea, which was very troublesome to the paddlers. We were under the necessity of waiting till it became smoother, before we could again take boat, to

go to the other side of the road, and farther than we had yet been.

We then for some time kept close along the shore, in order to be able the more easily to stem the tide, and allow for the drift which the strength of the current would occasion us to make. A great number of dolphins, (*delphinus delphus*), rapidly directing their course towards the head of the roadstead, passed at so small a distance from us, as to excite in those who could not swim the greatest fear that the canoe would be overset.

In a short time we reached a small habitation, situated in one of the most delightful parts of the island.

The fishermen from the opposite shore had plentifully supplied us with fish, and one of our party proposed to have it dressed in the manner of the inhabitants of the South Sea. Cocoa-nut juice was to serve as the principal seasoning; he added pimento to this dish, so greatly extolled by Captain Cook. We saw with pleasure, that it was much relished by our entertainers, to whom it was unknown; they had been eager to furnish our guides with every thing necessary for dressing it in perfection. Our shipmate, who had given the directions for the preparation of this admirable dish, acquired the reputation of an excellent cook among these islanders, who diverted us highly,

highly, by incessantly asking us if he was not the chief cook of our ship.

In the environs of this house I admired the beautiful shrub known under the name of *abroma augusta*. The *hedyarum umbellatum* made a conspicuous figure in the midst of a number of new species of the same genus. The nutmeg-trees here attracted pigeons of the species called *columba alba*, Linn. Those which we shot, had their craw filled with nutmegs.

The excessive perspiration occasioned by this burning climate, frequently produces cutaneous disorders. Five of the islanders at whose houses we stopped, had their body covered with *morphea*, the scales of which, when they came off, were immediately replaced by others, and shewed themselves the more, as their colour formed a striking contrast with the coppery hue of the skin. This disease frequently spreads over every part of the body. We saw also some children affected with another cutaneous disease, which seemed not to give them any pain: the greatest part of their body was covered with large warts, not a third of a decimeter from each other.

I seldom visited any houses in Amboyna, in which I did not find musical instruments. Here I likewise saw one, which I had not before met with elsewhere; it was a flute with a mouth-piece; its lower extremity was terminated by

two divergent branches perforated with holes, placed in the same manner in both, and thus forming two flutes, which gave pretty nearly the same sounds. The natives were very fond of playing in unison, and made use of one hand for each branch.

It was dark when I returned to the town ; the sea in the roadstead afforded me abundance of the small bodies which illuminated its surface, under the form of large sheets of light. The water that I took up in the most phosphoric places, left on the strainer through which I passed it small molecules, in no respect different from those which I had already examined before my arrival at the Cape of Good Hope, and in other places at great distances from land.

We landed on the coast near the town at the time of high water ; we were obliged to wade in the sea for upwards of three hundred meters, our canoes not being able to approach nearer the beach, on account of the shoalness of the bottom. The fishermen had just lighted some fires to attract the fishes, which the flood had brought up in such quantities, that we saw their nets filled with them.

The two following days were employed in strolling about the environs of the town. I was surprised to find on an island of so small extent, such a number of different species of vegetables ; but,

but, undoubtedly, from the proximity of Ceram, it is enriched with part of the plants of that large island.

In the evening of the 9th the Governor gave an entertainment on the occasion of the birthday of one of his sons, who was then in Europe for the purpose of completing his education; all the naturalists were invited, and we repaired to the government-house an hour after sunset. The coolness of the atmosphere then permitted dancing; the ball was already begun, and several cotillions had been formed in the grand saloon, in which his Excellency had received us at the first visit we paid him with Admiral D'Entrecasteaux.

This saloon was a sort of gallery decorated with some prints, and a small number of very indifferent pictures, placed at a great distance from each other. The walls were only laid over with some coats of lime; it would, however, have been easy, and by no means expensive, to adorn them with an excellent wainscoting, the island furnishing several sorts of wood proper for that purpose.

Almost all the daughters of the Company's servants were at the ball. Although the heat of the climate induced us to suppose that every over-quick movement would be avoided, we saw, with surprise, that these young ladies had adopted

a manner of dancing, which was very much against the display of their graces; they contented themselves with walking deliberately, scarcely going through the figure: and this air of *nonchalance* formed a striking contrast to the extreme agility which the dancers exhibited in different steps of these cotillions.

The orchestra consisted of four black slaves who played the violin, and of another who played the bass.

The ball was followed by a splendid entertainment, which was served up in the same saloon.

From the small number of guests assembled about half past nine o'clock, I imagined that the supper party would not be numerous; but the majority of the company being indifferent about dancing, did not make their appearance till towards ten.

Cheerfulness presided at this repast, which lasted a good part of the night, while the ball soon recommenced, and was not over till sunrise.

We were surprised not to find at this entertainment M. Strampfer, a minister of the Protestant religion, who had behaved to us with extraordinary civility; but we soon learnt that he had lately incurred the displeasure of the Governor, because, after having, for several years, paid the most assiduous attention to the education of his

children; this poor man had thought proper to solicit payment of what was due to him: in vain did he represent that the so much boasted honour of having the charge of the education of the Governor's children, was not of itself enough for the father of a family; he could obtain nothing more.

I employed a part of the day of the 10th in visiting several gardens, where, among the plants with which they were embellished, I remarked the Chinese *buxus*, *murraya exotica*, which formed very pretty walks, the *justicia variegata*, and the *croton variegatum*, so remarkable for the beauty of their flowers and foliage.

The henné (*lawsonia inermis*), called by some naturalists *bougnia laca*, is employed, as in Asia, to die certain parts of the body; and particularly the extremity of the fingers: the Chinese are the people who make most use of it.

I soon found myself near a house, round the edges of the roof of which, and from the neighbouring trees, were suspended a great number of cocoa-nuts. The owner of this hut told me, at the same time shewing me his numerous family, that he was preparing to make a large plantation of cocoa-palms: most of these cocoa-nuts had already sprouted, and he did not mean to put them into the ground until the young plants had attained about a demi-meter in height. He assured me

that

that without this precaution a number of them would rot and not come up.

The time of our departure from Amboyna was drawing near. The collections which I had made in this charming island were conveyed to the ship, and I myself also went on board on the 12th.

The eagerness that had been expressed to induce every person belonging to the expedition to repair on board, had made us presume that every thing was ready for our departure on the 13th, and that nothing could prevent our sailing but contrary winds. However, we had yet to replace part of the water that had been expended during the time we had been at anchor; this necessary duty was not completed till the afternoon, and we could not sail before the next day.

The ship's company were very well pleased with this refreshing-place; they had enjoyed here all the leisure they could wish, and even slaves had been employed to bring us our supply of wood and water, in large boats called *yacoos*.

Our ship had just been caulked, and the rigging having been examined with scrupulous attention, was found in good condition.

The island of Amboyna, called by the natives *Ambon*, was then the first of the Dutch governments in India, after the general government of Batavia.

The latitude of the place where the observatory was erected, near the western extremity of the town, was found to be $3^{\circ} 41' 40''$ south, and its longitude $126^{\circ} 9'$ east.

The variation of the compass was $1^{\circ} 13' 20''$ west.

A flat needle gave 3° for the dip.

Although the heat was oppressive, the thermometer daily varied pretty regularly only from 22° to 25° .

The barometer stood almost constantly at 28 inches 2 lines, its variation not being above one line.

The time of high water at our anchorage, at the full and change days, was half past twelve o'clock, and the sea then rose upwards of twenty-five decimeters. The tides flow and ebb twice a day.

The road of Amboyna forms a channel about two myriameters long, and its mean breadth is two thirds of a myriometer. Its shores, in many places, afford good anchorage; in some, however, there is a bottom of coral. Towards the middle the depth of water is too great for anchoring.

The fort called Fort Victory is built of bricks; here the governor and some of the members of the council have taken up their residence. It was then falling to ruins, and whenever the

guns were fired, it always suffered some very perceptible damage.

The garrison was composed of about two hundred men, the greater part of whom were natives: the rest were some soldiers of a company come from Europe, and a weak detachment of the regiment of Wirtemberg.

Most of the European soldiers were tormented with the desire of revisiting their country, but not one of them could have the smallest idea of the moment when he would be allowed to return thither: some who had been flattered with this vain hope for several years afforded to the rest an example that saddened their souls.

The small number of soldiers who survive their stay in India render those that have passed some years in the country still more valuable; and indeed, the Dutch East-India Company are seldom faithful to the promises they have made them, to allow them to return to Europe when their time is expired. At first, every method is used to induce them to enter into a second engagement; and those who carefully avoid every offer that is made them to prolong their stay in the island, do not sooner obtain their liberty. I met with some of these unfortunate men who had been detained upwards of twenty years; although at the expiration of their engagements they should have been free.

The island of Amboyna is divided into several districts, which in a number of places form so many villages, called *nygrees*. The command of each *nygree* is given to a native, who is dignified with the title of *Orankaye*. This man, to whom the police of his little *qanton* is confided, is himself very subordinate to the Dutch government, and to it he applies in cases of importance. The Dutch usually choose, for *Orankayes*, the natives who follow the Protestant religion, giving a preference to the ancient chiefs or their nearest relations, and particularly to those who are in the most easy circumstances.

Each of these *Orankayes* has the superintendence of about a hundred natives. The Dutch East-India Company, on investing them with this authority, present them with a silver-hilted sword. These chiefs are clothed in the European fashion, and all in black. They wear a cocked hat, the corners of which are very pointed and very low; shoes are also added to this official dress, which they never wear but when they are obliged to appear in public, or in presence of the Dutch chiefs.

The name of *Orankaye* is formed of two Malay words, *oran kaya*, which, translated literally, signify rich man.

The dignity of *Orankaye* is not an empty title; it gives these petty chiefs means of making a fortune,

tune, which, though very vexatious to those who are subject to them, they rarely fail to employ; for in putting the poor Amboyan under contribution to the agents of the Company, they take care not to forget their own interests. It sometimes however happens, that this fortune goes to wreck much faster than it has been accumulated, when the Company's agents find means to turn to their own advantage the cupidity of the *Orankayes*.

The inhabitants of Amboyna speak the Malay language; it is very soft: the analogy which it bears to the language of the inhabitants of the South Sea, has determined me to give, towards the end of the second volume, a pretty extensive vocabulary of it, which I collected at Amboyna, and in the island of Java, where I resided a very long time, at the end of this expedition.

The use of betel has been established from time immemorial among these people. They take some young leaves of the pepper-tree, called *piper siriboa*; in Malay *siri*, and after they have covered them with a little very pure lime, made of shells and newly slackened, they chew them with the cashew-nut: some even pursue this gratification without any other interruption than at the hours of eating and sleeping. I was very much surprised that, notwithstanding

the continual use of lime, these people had generally very sound teeth ; they acquired however a blackness, which penetrated into their enamel, without in the least diminishing its polish ; indeed they are in the use of cleaning them frequently, and the powder which they employ is not very expensive ; they procure it from a calcareous stone of moderate hardness, which they bruise upon sand-stone. They also make use of a piece of sand-stone to wear down the external part of their incisors.

These islanders do not content themselves with chewing betel ; they procure from Molucca an extract of bitter plants, known by the name of *gamber*, which they also employ in mastication.

The island of Amboyna consists of mountains of a middling height, particularly in the eastern part.

The coffee which they here gather, appeared to me inferior to that of our Isles of France, and of *La Réunion* *. The Dutch, settled at Molucca, appeared besides to care little how they prepared it. Their servants have all a practice of making it undergo a degree of torrefaction, by which it is often reduced to charcoal ; this is done in order that they may have less trouble in

* Better known to English navigators by the name of the *Isle of Bourbon*. T.

pounding it, and because for this purpose they make use only of wooden pestles and mortars.

Most of the marshy places are devoted to the culture of the sago-tree, which furnishes the inhabitants with a very wholesome food: it is one of the articles of provisions laid in for their long voyages, as well as the kernel of the *canarium*, which they dry in order that it may keep. This kernel, when fresh, is still more agreeable to the palate.

The rice which is consumed at Amboyna, is not the produce of the island; however, it would thrive very well in most of the low lands, where the water, which issues from the foot of the mountains, affords every possible means of facilitating its culture; but the Dutch East-India Company have prohibited the cultivation of this article, because the sale of it is a mean of getting out of the hands of the natives the money that the Company are obliged to give them for the cloves which they furnish. They thus prevent the increase of specie, and keep always at a very moderate price the produce of the labour of the inhabitants. Besides, the use of rice being pretty much spread among those who are in tolerably easy circumstances, it becomes a profitable article of trade, in the hands of the Company's agents, who supply them with it. They procure it principally from the island of Java.

Thus

Thus it is that this government, attentive only to its own interest, stifles among these people all industry, forcing them to abandon, in a manner, every other species of culture for that of clove and nutmeg trees.

The Dutch take care to limit the cultivation of spices, in order that it may not much exceed the ordinary consumption. These means, destructive of all activity, agree in other respects very well with the indolence of the natives.

A variety of farinaceous roots, and a great number of trees, afford them, almost without culture, an abundant subsistence, as if Nature had wished to compensate man for the indolence to which she seems to have condemned him under so burning a sky.

Grafting would doubtless be a mean of improving the various fruits that grow in this island; but no one, even among the Europeans, has yet succeeded in bringing it into use; they have always let the shoots dry before the circulation of the sap was established between it and the tree in which it had been ingrafted. It would however be easy to prevent this accident, by keeping up a proper humidity, till it is certain that the graft is firmly united.

The European vegetables do not agree well with the heat of the climate.

A very

A very small banana called *pisang radiga*, is considered as the best species; after the *li-tchi* and *garcinea mangostana*, it is the best fruit that I ate at Amboyna. They have also several species of *li-tchi*, among the number of which may be reckoned the *ramb-outan* of the Malays, *nephelium lappaceum*. Three celebrated botanists, Linnæus, Jussieu, and Gærtner, have fallen into an error in the classification of this genus, undoubtedly because they had not an opportunity of seeing completely the parts of fructification.

Linnæus classes it in the family of the *euphorbia*, Jussieu in that of the *compositæ*, and Gærtner in that of the *amentaceæ*; whereas it evidently belongs to the family of the *suponariae*.

The same prohibitory system which we have seen pursued at the Cape of Good Hope, was likewise followed at Amboyna. In order to prevent every rise in the price of provisions, the Company undertook to victual our ships. The natives supply the Company at a low price with provisions, of which, in disposing of them to us, they took care to make a good profit.

The Dutch have passed into a law, a custom still far more pernicious: the principal servants of the Company have a right to take, without paying, at the houses of the natives, the provisions necessary for their daily consumption. Nothing can be conceived more oppressive than this arbitrary

bitrary contribution. The most industrious man, as well as the most indolent, is almost certain that they will hardly leave him any thing to subsist on; and indeed the greater part of them are contented to subsist on articles of easy culture, passing in idleness a time which, under another system, they might employ in procuring a certain independence.

The Fiscal completes the oppression of the inhabitants: he has the direction of the police, and has a right to impose, for his own emolument, the pecuniary penalties, which he fixes in proportion to his avidity, and the fortune of the natives, whom it is often his pleasure to find guilty, without their having committed the smallest offence. It was M. Mackay who then exercised this employment. He was very different from the greater part of his predecessors; the inhabitants of the island had reason to be well satisfied with his humanity, and he had the more merit in doing good, as his place enabled him to do them, with impunity, all possible harm. This worthy man was incessantly repeating to us, that he preferred living in mediocrity, to enriching himself by adopting such methods. When M. Mackay was one day explaining to us all the privileges of his place, he informed us that some sailors belonging to our ships had occasioned a riot, at an unseasonable hour of the night,

night, at the house of a very rich Chinese, who sold arrack and other spirituous liquors. He told us, with much ingenuousness, that he might in this case have availed himself of the rights of his office, to extort a good sum of money from this Chinese, by imposing on him a heavy fine, for his own emolument. Many others, said he to us, would not have failed to do this, but I do not repent having acted with integrity.

The clove-tree constitutes the principal article of culture of Amboyna, and of several islets situated to the eastward of this island, where it thrives as well as possible. In each of these islets the Dutch keep residents, to prevent the fraudulent exportation of this valuable commodity.

It appears that the soil and the nature of the land of the island of Banda, agree still better with the culture of the nutmeg-tree than the island of Amboyna; for it is generally admitted that the nutmeg of the latter is inferior.

Formerly the nutmeg-tree and the clove-tree were diffused in the islands of Ternate, Tidor, Macquian, &c. in a much greater quantity than at Amboyna and Banda; but the Dutch, wishing to appropriate these valuable trees exclusively to themselves, forced the sovereigns of the former islands to destroy the plantations of them: at their courts they keep agents, who are very strict in their visits; and these trees are allowed to be cultivated

tivated only at Amboyna, and on the other islands which are under the immediate dependency of the Company, and where they can exercise a continual superintendence. This inquisition, introduced by Dutch cupidity, is singularly counteracted by the birds, which go and deposit the seeds of the spice-trees in the islands adjacent to those where they are cultivated; this has determined the Company also to fix there residents, whose principal mission is to make constant researches in order to destroy all those which they may meet with: often, indeed, these trees happen to be sown in places so steep, that they escape the most active vigilance.

The slaves, imported into the Moluccas, are, for the most part, drawn from Macassar and Ceram. The women of Macassar have in general agreeable features, and are of a middling stature; their hair is not curly; their skin, which is of a tint still more yellow than that of the European women who are afflicted by the green sickness, occasions them however to be designated by the natives of the Moluccas by the name of white women, *paran-pouang poutee*.

Before the Dutch had established the slave-trade, the islanders of Ceram practised the barbarous custom of eating the prisoners that they had taken in their battles. It is painful to learn that they have abandoned this atrocious

atrocious habit only because they derive a greater profit from the sale of their captives. If there has resulted from it an apparent good, in other respects it has with them been a more frequent occasion of war. Man must be arrived to the lowest state of degeneracy for the introduction of slavery to have been able to put him in the road to civilization. This may, however, be said of these formerly *anthropophagi*.

The Dutch who are settled in the Moluccas, speak only the Malay language to their slaves: they take good care not to teach them their mother tongue, in order that they may not be understood when they converse between themselves.

As soon as the Dutch East-India Company had appropriated to themselves the exclusive commerce of the Moluccas, they endeavoured to ascertain their population; at that time, by exaggerated computations, which tended to give a high idea of the conquered countries, it was made to amount to a hundred and fifty thousand souls, which, according to the most consistent of the more recent calculations received, and according to the most general opinion, was double the number of its inhabitants. The quantity of cloves which are annually gathered there amounted to about two thousand bales of four and twenty myriagrams three kilograms each,

each. The crops of two years form the cargo of three ships, two of which are dispatched in one year, and the other the year following. The exportation of this commodity, like that of the nutmeg, sometimes exceeds the ordinary consumption: it is well known, that, in this case, the Dutch East-India Company cause the surplus to be burnt, in order to keep them always at the same price.

Notwithstanding all their care to monopolize the spice-trade, it is reckoned that they lose a fifth of the annual crop by smuggling. The scanty salaries of their agents not leading them rapidly on to fortune, several employ means attended indeed with danger, but easily practised, in order to emerge from this state of distress. In spite of the vigilance of the Company, these agents contrive to pilfer from them a small part of their spices.

Only a short time had elapsed since the Governor of Banda and the Deputy Governor had been dismissed from their employments, and sent to Batavia, for having purloined, for their own profit, part of the produce of that island; but abuses are carried to such a pitch, that this example will serve only to excite others to conduct themselves with more address, in order that they may not be discovered.

This

This contraband trade is chiefly carried on by the canoes of Ceram, that large island being very close to the spice islands; what comes from them is sold to English vessels, which furnish in exchange India muslin, opium, fire-arms, gunpowder, lead, articles of hardware, and tin, which last the inhabitants of Ceram greatly value, and of which they make bracelets, ear-rings, &c.: some of these articles are afterwards resold at Amboyna.

The Dutch have two factories at Ceram; one at its south-west extremity, and the other at Savaï. Admiral Bougainville had been misinformed in stating that they had been driven away from this latter post. They have, indeed, lost very extensive possessions in the other parts of that large island, but this one they have preserved.

The resident who received Bougainville at the time of his stay at Bouro, had been dead several years. We had the pleasure of seeing at Amboyna his widow, who still preserved an agreeable recollection of the stay of the French. Her fondness for our language had induced her to employ all the resources which she had been able to find, so far from Europe, to have it taught to her children.

The Chinese are almost the only foreigners whom the Dutch allow to reside in Amboyna;

but they are obliged to get naturalized ; then they can return no more to China. They are permitted to navigate in the Moluccas ; and they can procure, at Macassar and Batavia, where the ships arriving from China are admitted, the merchandise which these vessels bring from that country. They are all engaged in trade. Some have purchased, at a very high price, the exclusive privilege of vending particular articles ; accordingly, they sell them very dear. They employ all sorts of means to get money : their reputation frequently suffers by it ; but, in this respect, they have lost every spark of sensibility. Some Jews, to whom the Dutch East-India Company has granted permission to remain in the island, enter into competition with them in trade ; but they are not successful rivals ; the Chinese have a great many advantages over them, from their number and their connexions.

The custom-house officer of the Company is a Chinese ; he is besides the chief of his countrymen settled in the island, and is entrusted with the police among them, in such unimportant cases as the administration of Amboyna has not reserved for its own decision. We went one day to his house, with a Protestant clergyman, and drank there some very good tea. The table was covered with a great variety of fruits, extremely well

well preserved; one of the best was the young nut of the fruit of the sago-palm. This chief, who is called the Chinese Captain, pointed out to us, with an air of satisfaction, his coats of arms variegated with a great number of colours; they were scattered with profusion in the apartment where he received us; and his bed was surrounded with them on all sides.

His house, like that of the other Chinese, bore no resemblance to the habitations of the natives of the island. The Chinese build much more substantially; their houses are constructed like those of the Europeans, with the exception of some little difference in the manner in which they are laid out. The body of the building is of wood; the mud walls are covered with a very thick roughcast, which is laid over with several coats of lime.

The frequency of earthquakes and hurricanes has occasioned a preference to be given to wooden houses. There are scarcely any but the public buildings that are constructed with stone. It almost always happens that, in these tempestuous moments, the inhabitants are obliged to quit their dwellings, and retreat to little huts very slightly built, where they are in much greater safety than in their houses, which the winds and the earthquakes sometimes overthrow.

We enjoyed tolerably fine weather during our stay at Aïnboyna; the winds did not blow with any degree of violence; and those which came from between the south-east and the north-east were very faint.

The market, where different fruits of the country are sold, is held in the quarter of the Chinese. The Malays designate this place by the term of *bazar*, the same as the Arabs. It is principally towards the close of the day that the venders assemble; and here they remain till nine o'clock in the evening. Each of these fruiterers is lighted by one, and more frequently by two torches, formed of the rosin called *dammer*, which furnishes a sort of *cycas* known under the same name; it is the *dammar alba*, *Rumph. Amb.* vol. ii. chap. xii. tab. 57. They wrap it up in leaves of the sago-tree, without adding to it any wick; it burns well, making little smoke; only care must be taken to lower, from time to time, the leaf of the sago-tree, which is reduced to ashes, in order to bring it to a level with the rosin as fast as it is consumed. These people are lighted at a very cheap rate: each torch of *dammer*, two decimeters long, by a third of a decimeter in thickness, costs them about a centime of our money, and furnishes a pretty good light for upwards of three hours. This rosin also serves them as a torch in their houses.

Some other eatables are also sold at this *bazar*; and particularly fish, of which a much greater quantity is to be met with dried than fresh. Fish, under a burning sky, and in an atmosphere prodigiously charged with humidity, would very soon putrefy, if the inhabitants had not means to dry it expeditiously. When it is cured by the smoke of a slow fire, it acquires a flavour which makes them prefer it to fresh fish.

The Molucca Islands, after having been a long time under the domination of the Arabs, the Moors, and the Malays, passed under that of the Europeans. The Portuguese, the Spaniards, and the Dutch, disputed for the possession of them, after having there established factories and built forts. The Dutch at length remained masters of them, and they have for a great number of years enjoyed exclusively the spice-trade. These different sovereigns have wrought such a change in the manners of the natives of Amboyna, that it is very difficult to distinguish among them at this day any traces of their primitive character. The Portuguese introduced among these people the Catholic religion. The Dutch have made every effort to direct them towards the Protestant faith, considering this mean as better calculated than any other to subject them entirely to their own control; accordingly, they have a great number of schools where the chil-

dren of the natives are instructed in this religion, and taught to read and write in the Malay language. The service is performed in the Malay tongue, in a church set apart for the use of the natives, and in Dutch in another intended for the Dutchmen. There are two ministers to each.

The Chinese, as may be supposed, have here a pagoda.

A few natives of the island, who have preserved the religion introduced by the Arabs and the Moors, have a mosque. It is chiefly on the other side of the roadstead, to the northward of the town, that is to be found the greatest number of true believers. The Dutch have been more successful in making proselytes to their religion in the environs of their principal establishment. The rod of iron, with which they govern this miserable people, so assimilates them to slaves, that it is by no means astonishing to find among them part of the vices which proceed from this state of degradation of man.

Notwithstanding these people are accustomed to give up almost every thing they possess to the Europeans, there is one article which they are very little disposed to resign. Jealousy is with them carried to such a pitch, that it would be highly dangerous to attempt to hold any im-
per

per conversation with their women. No fear of punishment would be sufficient to hinder them from executing their revenge.

Among the Dutch, the men have preserved for their dress of ceremony their European clothes, but they all have waistcoats with sleeves, in order to be able to pull off their coat when the master of the house where they are invited desires them to put themselves at their ease, himself setting them the example. Those who wear a wig never fail to deliver it into the hands of one of their servants, and they then put on a large cap of very fine white linen. The European women wear a petticoat which almost touches the ground, and a gown in the form of a chemise, open in front, which falls no lower than the petticoat, and is drawn in by a sash; their hair is rolled in a spiral form behind the head, and confined by two large pins which cross each other: this is their ordinary dress. The women of the natives, who are in easy circumstances and reside in the town, wear dresses of the same make, but most commonly black. Those of a blue colour are in particular request among the women who live in the country.

The female slaves wear, as a gown, a sort of shift, which is not open in front like that of the free women.

The free men wear their hair turned up with a comb. The slaves tie a handkerchief round their head.

The Chinese, as is well known, received spices from the Moluccas many centuries before the Europeans made themselves masters of them. The Greeks and the Romans also had a knowledge of them. This was for a long time the object of the researches of the first navigators who penetrated into the Indian seas. Those valuable aromatics which were at that time concentrated in a small number of islands, have since been carried into very distant countries, where they thrive perfectly well. We have reason to hope that one day our colony of Guiana will rival the Moluccas, and by procuring for the whole world, at a moderate price, a greater quantity of spices, will bring them into more general use. They are also cultivated with success in the Isles of France and of the Reunion.

We took on board the *Recherche* two does and a stag, with the intention of enriching New Holland with this beautiful species of quadruped.

We laid in a good stock of fowls, ducks, and Guinea geese.

We did not bring away any cassowaries *.

* *Struthio cassuarius*, Linn.

Although

Although they are here considered as poultry, it is not easy to procure them; for they are not natives of Amboyna, but are brought thither from the large islands situated to the eastward. This bird would scarcely bear a sea voyage; besides, its flesh is black, hard, and by no means juicy. In proportion to the room that it would have occupied on board, it would have afforded much less meat than the poultry we had provided; for, with the exception of its thighs, which are very muscular, since nature has specially destined this bird for running, the rest of its body is of a moderate size relatively to its height.

Our roots were principally sweet potatoes and yams.

Some fine bunches of plantains, and various species of pumpkins, adorned the ship's stern.

We had purchased a good number of hogs and goats.

We carefully preserved our cow, although her milk was now dried up; for it would have been impossible to replace her. At Amboyna, indeed, is found in the number of the domestic animals a species of buffalo, common in India; the female gives but little milk: besides, this quadruped being almost ungovernable, would be very dangerous and very troublesome on shipboard.

Our butcher, who was entrusted with the feeding of the cattle, had been able to procure only a very hard and very dry forage, composed in a great measure of the *anthistiria ciliata*; but fortunately he had provided some thick plantain stems, which for a long time afforded these animals a succulent food. As they were reduced to a scanty allowance of water, the moisture of these plants was very beneficial to them.

The flour which was procured for us at Amboyna was of a middling quality; and of this the Company's agents could furnish us only about five hundred myriagrams. This scarcity, whether real or fictitious, occasioned us to pay for it an exorbitant price.

We found here very little European meat. The Deputy Governor, however, had a good stock of Hamburg beef, which is an article in high request with navigators. He was so good as to spare a part of it to the commander of the expedition; but, when we got to sea, it was discovered that the Deputy Governor's servants had committed a great breach of trust. The most fleshy part of these pieces of beef had been taken off, and there had been delivered to the Admiral nothing more than the bones and the tendinous parts.

Young bamboo shoots, cut in slices and pickled in vinegar, form an excellent article for a long voyage; we laid in a great quantity of them. These shoots are in general very tender. Care must be taken to cut them in time. They are sold in the market as culinary vegetables, for which they are a good substitute. Their length is frequently a meter, and their thickness a third of a decimeter.

We had stocked ourselves with cloves and nutmegs preserved in sugar. The husk of the nutmeg is, in this case, the only eatable part; unfortunately, the ignorant confectioners had chosen nutmegs in too ripe a state. The cloves being already as big as middle-sized olives, still preserved too aromatic a flavour to form an agreeable sweetmeat: a person must have an Indian palate to enjoy these dainties in perfection. As much may be said of the preserved ginger, of which we also took a supply.

Our stock of sago was far too considerable, for we could consume only a very small part of it; the ship's company could never reconcile themselves to this mess, however wholesome it might be, and, in spite of all the arguments of our surgeon, they conceived such a disgust for it, at the end of a few months, that they preferred to it salt meat even of the worst quality.

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We scarcely had remaining any hogsheads of wine that was drinkable. The only spirituous liquor that we could procure was arrack, of which we purchased several casks. Some navigators speak a great deal too much in praise of this liquor, which is not so good as brandy even of a middling quality.

CHAPTER IX.

Departure from Amboyna.—Singular effect of the tides.—We get sight of different islands.—Ravages occasioned on board by the species of *tinea* called *blatta Germanica*.—Navigation along the south-west coast of New Holland.—Death of the smith of the *Recherche*.—A gale of wind drives us towards the coast.—We anchor in Legrand's Bay.—The *Esperance* loses at the anchorage two iron tillers.—The chain by which she rides at this anchorage breaks.—Various excursions to the neighbouring country.—New species of swan.—Marine salt found at upwards of two hundred meters in perpendicular height; in what manner it had been carried thither.—Citizen Riche loses himself upwards of two days in the woods on the main land.—We sail from Legrand's Bay, in order to continue to range along the shore.—The want of water makes us quit this coast.—Arrival at Cape Diemen.—We anchor in Rocky Bay.

WE were now waiting only for a fair wind to sail from Amboyna. At half past seven o'clock in the morning of the 14th of October, a light breeze

breeze sprang up from the south-east; we immediately weighed anchor, and by eleven o'clock we were already at the outlet of the roadstead, the west point of which bore west $6^{\circ} 15'$ north, and the east point east $6^{\circ} 15'$ south: we were at the distance of two kilometers from the latter.

By the observations which were made at noon, we found that the west point of Amboyna was in the latitude of $3^{\circ} 46' 54''$ south, and longitude of $125^{\circ} 53' 48''$ east.

The wind continuing all day at south-east, we kept close-hauled on the larboard tack.

One of the boys of the large Dutch East-India Company's ship that had sailed a short time before for Batavia, had concealed himself on board of the Recherche, and on the 15th he made his appearance on deck, almost at the same moment that the Captain of the Espérance informed the Admiral, that he had just found in his ship six runaways from Amboyna; namely, three of the Company's soldiers, one sailor, and two black slaves. These unhappy creatures fled from a country, where they all, with little distinction, were groaning in slavery.

The Admiral had given permission to the ships' companies to take on board for themselves hogs and poultry; accordingly every part of our ships was encumbered with them. They were almost all placed in the between-decks, and they

were the more troublesome, as the noxious odour which they diffused was considerably augmented by the heat of the climate.

On the 18th, being in latitude $7^{\circ} 10'$ south, and longitude $123^{\circ} 14'$ east, there appeared to us to be no variation of the compass.

We had already been repeatedly witnesses of a phenomenon which never fails to terrify navigators, because they in the night sometimes take it for breakers; we again saw it on the 19th, very early in the morning. The air being scarcely agitated, we perceived the sea foaming at a distance; some waves, impelled with force, succeeded each other, and reached us in a short time: a very strong rippling, occasioned by the sea having received an impulse different to that given it by the wind which had blown during the night, succeeded to this motion of the waters. The cause appeared to me to depend on the tides which run between the lands, where the currents acquire a rapidity proportionate to the confinement which the waves of the sea there experience.

We got sight of Kisser Island, which we perceived at nine o'clock in the morning, bearing from south to east by south: it is very hilly, especially on its western side. Its greatest extent is from west south-west to east north-
east;

east; it lies in the latitude of $8^{\circ} 13' 2''$ south, and longitude of $123^{\circ} 32' 17''$ east.

A very cloudy sky did not allow us, till towards four o'clock in the afternoon, to discover the northern coast of Timor *, from which however we were only at the distance of a myriameter: some very lofty mountains reared their heads above the clouds. We perceived during the night fires lighted on them at different heights. No doubt, at this elevation, the inhabitants experience the necessity of protecting themselves against the cold of the night, and perhaps too they employ this method to keep away wild beasts. These fires were to us so many light-houses, which served to direct our course along the coast, when a few puffs of wind came and interrupted the calm that reigned during a good part of the night.

At seven o'clock in the morning on the 23d, we were a demi-myriameter from a settlement which the Portuguese have on the west coast of Timor; they call it Laphao. Its position is in latitude $9^{\circ} 22' 45''$ south, and longitude $122^{\circ} 25' 36''$ east.

The Portuguese colours, which had just been hoisted there, bore south 30° east. The fort saluted us with five guns. A canoe with a double

* For a modern account of this hospitable island we refer the reader to Bligh's *Voyage to the South Sea*, chap. xviii. T. outrigger

outrigger immediately came and reconnoitred our ships, to which she approached very near; but she soon returned towards the west, without having spoken us. Presently we ran in still nearer to the land: we saw on the beach some natives and a few canoes. We sounded several times, without finding bottom at thirty fathoms.

At four o'clock in the afternoon we distinguished Batoa Island at the distance of two myriameters to the south-east; it is separated from Timor only by an interval of a demi-myriameter.

Calms being very frequent along the coast of Timor, we hauled off from it in the afternoon of the 25th by the help of a southerly breeze, and directed our course to the westward, without however finding fresher winds. These calms seem to be occasioned by the heat, which is the more intense as the sun at this season here darts its rays almost perpendicularly.

The continuance of the calms renders navigation very laborious along these coasts, on which a ship is incessantly in danger of being driven by the strength of the currents. The composition of charts of these different islands is extremely difficult, on account of the currents, which are very irregular; and indeed those which have been hitherto constructed present very material differences.

A great number of various species of whales

came repeatedly and surrounded our ships ; they spouted out water on our very decks. We saw clearly by the little fear with which we inspired them, that they had never been pursued by fishers.

Our ship was encumbered with lories purchased at Amboyna ; their piercing cries left us not a moment's peace during the day ; they by no means agreed with their situation on board, for some of them daily perished. They were attacked by convulsive movements, which vitriolic ether certainly had the power to alleviate, without however saving their life.

Mortality had also spread among our fowls ; most of them were attacked by violent ophthalmia, occasioned by the coldness of the nights ; and those which were deprived of sight, ere long died of hunger. Yet it would have been easy to prevent this accident, by sheltering these animals from the night air by means of a screen properly fitted to the front of the coops.

Much had been said to us in praise of the Amboyna water, for its property of keeping a long time at sea without putrefying ; but the case was different with us ; ours was already very much tainted, and we could no longer drink it till it had been violently agitated, in order to expel from it the inflammable air, which fortunately adheres to it but in a slight degree. This unexpected

expected decomposition was surely owing only to the little care that had been taken in rinsing out the water-casks: There had remained in them enough of the inflammable particles contained in the old water to speedily corrupt the new:

It is certainly very disagreeable to have to drink water as stinking as that of the most filthy bogs; but no apprehension remains on the mind, when it is known that by agitating it for some minutes, in the manner I have before indicated, it regains its original purity.

As early as half past four o'clock in the morning; we perceived by the light of the stars the Island of Savu, which bore from west 13° south to south 27° west. We were only two kilometers from the coast. We steered west, in order to pass to the northward of this little island; and about half past nine o'clock we found ourselves abreast of the bay in which Captain Cook entered in his second voyage, after having passed through Endeavour Strait *: we distinguished five canoes afloat quite close to the beach, where they were sheltered from the sea, which was breaking on a small reef even with the water's edge.

* This is a mistake of the author. It was in his first voyage that Captain Cook anchored at the Island of Savu, of which he gives a particular description. See Hawkesworth's *Collection of Voyages*, vol. iii. page 267 and following. T.

The Island of Savu presents an enchanting prospect: it is intersected, particularly towards the south-west, by very fine hills, the gentle declivities of which must afford the natives a favourable and easily cultivated soil.

Some cocoa-palms, scattered about in clumps on the skirts of the beach, served as a shelter to a few huts which still more embellished these charming plantations. This island is in latitude $10^{\circ} 25' 48''$ south, and longitude $119^{\circ} 45' 19''$ east. The Dutch have here a small settlement.

Towards the middle of the day we set an island bearing from south $46^{\circ} 30'$ west to south $57^{\circ} 50'$ west, at the distance of a myriameter and a half. It appeared to us not to be more than a myriameter in length; it is situated in the latitude of $10^{\circ} 28' 50''$ south, and longitude of $119^{\circ} 56' 17''$ east.

At six o'clock in the morning we got sight of New Savu, bearing east $31^{\circ} 30'$ south, distant a myriameter. This little island, which is very low, lies in latitude $10^{\circ} 37' 28''$ south, and longitude $119^{\circ} 2' 47''$ east.

At sunset we discovered part of the island of San del Boe, about four myriameters distant to the north north-east; it is covered with mountains of moderate elevation, and is in the latitude

of $10^{\circ} 27' 4''$ south, and longitude of $118^{\circ} 6' 34''$ east.

The position of an islet which bore from north 1° east to north $3^{\circ} 30'$ west, at the distance of four myriameters, was fixed at the latitude of $10^{\circ} 27'$ south, and longitude of $118^{\circ} 7' 5''$ east.

In the course of the day of the 29th the currents ceased to set us to the westward, and carried us ten miles towards the north. The bight in the lands of New Holland, to the southward of Timor, is probably the cause of this different direction of the currents, which constantly run from east to west through Endeavour Strait: they soon resumed their direction towards the west, causing us to drift from twenty to twenty-four miles a day.

It is to be remarked, that Captain Cook, after having passed through Endeavour Strait, had, like us, for four and twenty hours in these seas, a difference in his northing, but still greater than that which we experienced.

Since we had on the 30th lost sight of the Island of San del Boe, we met with no land before we reached the coast of New Holland. The light airs which we experienced made us fear that we should arrive there a little too late to complete the survey of it.

We probably were not far from some rocks

in the afternoon of the 2d of November, for we were surrounded by a vast number of birds, which never go very far from land, and they disappeared at the approach of night. We also saw a great many of them the next day, the 3d. Navigators who visit these seas should redouble their attention, in order to avoid running on the rocks which serve as a retreat to these birds.

During the night of the 15th our stag fell overboard, through an opening left at the fore part of the gangway, which was much larger than was necessary for the duty of the ship; besides this loss, we had also to regret that of a hind, which had been recently delivered over to our butcher, only because she was so ill that she would shortly have died. Captain Huon was made acquainted with this accident, and desired to take all possible care to preserve the stag which he had on board, but it died before our arrival at New Holland.

When we passed the Trials we were too far distant to discover them; we saw however several oceanic birds, which no doubt go and take refuge there during the night.

The species of *tinea* called *blatta Germanica* had multiplied to such a degree for several months past since we had been under the tropics, that they incommoded us extremely. These insects did not content

content themselves with our biscuit; they also devoured linen, paper, &c.: nothing came amiss to them. Their fondness for vegetable acids however astonished me; no sooner was a lemon cut than they quickly dispatched it; but what astonished me still more, was the rapidity with which they emptied my ink-horn, when I forgot to put in the stopper. The caustic quality of the vitriol, with which they gorged themselves, seemed to have no prejudicial effect on them.

The Amboyna sugar, extracted from the sago-palm, was an allurement which they could not resist. We destroyed a great many of them by mixing a small quantity of this sugar with water in a cup, into which they came and fell headlong.

These insects tormented us still more by night than by day; they were continually disturbing our rest by settling on every part of the body that was uncovered.

The *tinea* called *blatta orientalis* had made its appearance almost from the time of our leaving Brest; but having very quickly disappeared, it was succeeded by this troublesome species.

In the course of the day of the 16th we were carried thirty-eight miles to the north-west. The Trials, from which we were not far distant, and some shoals, were doubtless the cause of these violent currents.

We left the region of the tropics in the course of the 18th.

The mercury in the barometer rose the same day to 28 inches 5 lines ; which appeared to me the more astonishing, as it varies very little between the tropics. Besides, this was the only time in our whole voyage that it rose so high in a similar latitude. Although the thermometer was not lower than 18° , we nevertheless experienced a lively sensation of cold.

On the 20th we began to meet with the variable winds, in the latitude of 26° south.

Our goats were perishing daily for want of proper food : we again lost two in the course of this day.

About five o'clock in the afternoon of the 27th, the *Espérance* was on the point of running aboard of us ; yet there was wind enough for keeping a ship properly under command : this negligence of the officer of the watch might have occasioned much damage to our ships, and forced us to abandon the project of visiting the south-west coast of New Holland, which we were shortly to explore. A spare boom was fortunately run out in time to keep us clear of her.

On the 5th of December, the sight of several species of gulls and other birds, which seldom go so far from the shore, indicated the proximity of land. The wind blew too strong at west south-west

west to allow us to stand directly in for it. The sea being also very high, and the horizon very much obscured by clouds, determined us to steer to the south-east by south, in hopes that next day circumstances would be more in our favour.

At noon we found ourselves in the latitude of $34^{\circ} 12'$ south, and longitude of 112° east.

We spent the night lying to, and sounded repeatedly, with a line of a hundred and twelve fathoms, without striking ground.

It was not quite half past two o'clock in the morning of the 6th, when we stood on to the east south-east, and as soon as daylight appeared, the *Espérance* made the signal for land in the north-east quarter, at the distance of three myriameters; it was the western extremity of the south-west coast of New Holland, discovered by Leuwin in 1622. It made like a low land, extending from north-west to south-west.

At six o'clock we shaped our course east by south, and when we were a myriameter from the coast we followed it in its direction to the south-east. A fresh breeze from the west north-west drove us along at the rate of three myriameters an hour.

The interior of the country was intersected by downs covered with sands, which exhibited the aspect of the greatest aridity. These little mountains, scattered over a low land, seemed at a distance

tance to form so many islets: the interval which separated them afforded a few shrubs, the foliage of which being of a blackish tint, indicated an unhealthy state.

Some rocks which rose perpendicularly from the middle of these sandy plains discovered the formation of the downs; they doubtless lay on other rocks of the same nature, the shape of which had allowed the sands, driven by the winds, to collect there more easily. It must be very uncommon to find fresh water on such grounds, where that which issues from the clouds is filtrated, no doubt, to great depths before it meets with strata that arrest its progress.

In the morning our smith was found dead in his bed. The day before he had been present at an entertainment which the French gunners formerly celebrated with scrupulous exactness. They had for a long time saved up, for this repast, a great quantity of provisions. The unfortunate smith, enfeebled, as we all were, by the abstinence to which we were condemned since our departure from Amboyna, had indulged his appetite too freely. An apoplectic fit had carried him off. This loss would have been irreparable had not chance brought on board, at the Cape of Good Hope, a very intelligent workman, who succeeded him.

At noon, being in latitude $34^{\circ} 45' 36''$ south,
and

and longitude $113^{\circ} 38' 56''$ east, the nearest coast bore north-west, distant one myriameter, and we at the same time saw land from west 15° south to east $40\frac{1}{2}^{\circ}$ south.

The mountains began to form a pretty regular chain, the highest not appearing to be more than four hundred meters perpendicular. We remarked on them large spots entirely destitute of verdure; in other places were weak shrubs thinly strewn, in the midst of which we saw a very small number of trees of a middling height.

The mountains sometimes exhibited themselves in several rows, rising by degrees one above the other.

At four o'clock in the afternoon we discovered some breakers at a small distance from the coast, and a little beyond them to the eastward, two rocks a kilometer from the shore, and which we passed very close. The largest was remarkable for a separation in its middle, whence rose perpendicularly, about fifty meters above the level of the sea, an insulated piece presenting the form of a very flat wave; I took it for sand-stone, and the rock which served as its base was of the same nature. We admired the fine effect of the sea, which, impelled by violence, assumed, in rising to the very summit of this rock, a perfectly white colour, and again fell in a sheet to shew this singular

gular rock, which seemed then to issue from the bosom of the deep.

At this time we saw the coast trending pretty regularly towards the east south-east; and its little sinuosities were terminated by capes, the most prominent of which scarcely extended two kilometers into the sea.

Being driven along by a boisterous wind, we were not free from apprehension, as we were so near a coast which did not afford us the smallest shelter; but we hauled off from it during the night, by steering south south-east. A very heavy sea from the west north-west made our ship labour prodigiously. From the time that we had been sailing in smooth water, we had lost the habit of bearing so much motion; the impetuosity of the wind was felt in squalls, and allowed us to keep under only a very snug sail.

At half past six o'clock in the morning of the 7th we steered to the north-east, in order to draw in with the land, which we soon saw again in that direction, being carried along by a very stiff breeze at west. We had fallen a little to leeward. The coast then trended almost directly to the eastward. The interior of the country presented the same aspect as on the preceding day. We there remarked vast spaces of a yellowish colour, which we took for so many areas of a hard stone,

on

on which we could not distinguish the smallest trace of vegetation.

At noon we were in latitude $38^{\circ} 17'$ south, and longitude $115^{\circ} 12'$ east. Presently the mountains became lower, and we had a view of a vast plain of sand, where we saw scattered here and there at great distances several hills, some of which formed on the shore capes projecting not far into the sea.

About four o'clock in the afternoon we passed a cluster of rocks situated near the coast, and thinly covered with shrubs, the dull green of which attested the aridity of the soil. At six o'clock we were opposite to a bight, the depth of which we could not discover; a ship would have been perfectly sheltered there from the tempestuous winds that blew since we had been ranging along this coast. A cape which ran out from the north-east to the south-east, near a myriameter towards the open sea, with some islets and several rocks placed at the entrance of this bay, afforded a good shelter against the winds from the offing; but the sea running high, we were prevented from sending a boat to sound this inlet.

We spent the night lying to.

Being a demi-myriameter from the coast, we sounded in forty-one fathoms and a half, over a bottom of broken shells and *madreporeæ*, mixed with

with a pretty transparent sand resembling quartz: this indication made me presume, that we should have found as good a bottom in the bay which we had just passed.

During the whole night, an unclouded sky allowed us to see the land, to which we kept pretty close, always finding the same sort of bottom.

The westerly wind not blowing very strong, at half past four o'clock in the morning of the 8th we made sail, in order to range along the coast, which trended to the north-east; presently it turned towards the east and the south-east.

At eight o'clock we passed opposite to a bay, which appeared to us to be about three myriameters in depth, its entrance being of at least equal extent: it is open to winds from the south-east, and a ship is sheltered there against westerly winds. Farther on we saw in the offing some small rocks not far from the coast.

At noon we were in latitude $34^{\circ} 48'$ south, and we observed inland to the northward, a mountain loftier than any of those which we had seen on the preceding days: insulated in the midst of vast plains of sand, it produced a very picturesque effect, and appeared about five myriameters distant from the coast. Its rugged summit exhibited a great many points very prominent, and for the most part perpendicular. These were distinguishable throughout the whole extent of the

mountain, which appeared to stretch a myriameter and a half from east to west. This configuration leaves no doubt that the stones of which it is formed are extremely hard.

As yet we had not perceived any sign of inhabitants since we had coasted these barren shores. It was to be presumed that some spring of clear water must attract them towards the foot of this mountain. Presently the smoke of two large fires, which they lighted there, made known to us their presence.

At half past four o'clock, after we had doubled a cape, terminated by some rocks at no great distance from the coast, we found ourselves opposite to a bay as wide, but not so deep as that which we had seen in the morning; it was skirted by lands in general very low; we remarked, however, towards its eastern side, a few hills detached from each other. It affords a good shelter against winds from the west and south-west, but it is entirely open to those from the south-east.

Some red-shafted tropic-birds, and a few albatrosses of a darker hue than the common ones of the Cape of Good Hope, were flying round us.

We lay to during the night, and, in sounding every hour, we had constantly thirty-three fathoms water, with a bottom of gray sand.

At half past four o'clock in the morning of the 9th we stood on north-east by north, in order

to

to draw in with the coast, and we saw it almost immediately, extending from north 2° east to west 25° north. A clear horizon allowed us also to distinguish some other low lands which trended to the north-east.

Presently we passed between the main land and some reefs that were two myriameters distant from it. At eight o'clock we ran past others, two myriameters and a half in the offing; and before long we discovered that an islet, which we saw to the eastward, was connected to the main by a chain of reefs, which, stretching out into the offing, forced us to haul off to the southward, till we had weathered them.

Three fires lighted successively on the point of land whence the reefs spit off, apprized us that there were some savages at this spot. The productions of the sea are, no doubt, the principal resource of these people, who live on so steril a soil.

At noon, being in latitude $34^{\circ} 10'$ south, and longitude $118^{\circ} 22'$ east, we set the small island, which I have just mentioned, bearing north 38° east, at the distance of two kilometers.

From other fires lighted along the coast, like the former, rose thick columns of smoke, the inhabitants doubtless wishing to announce to us their presence.

At half past four o'clock we left in the offing

an islet four myriameters distant from the coast; it was connected to a ledge of reefs, which extended upwards of a kilometer to the eastward. Our depth of water was then ten fathoms and a half, and some little time after a line of twenty-one fathoms did not reach the bottom.

A calm prevailed for a few moments towards the close of the day; but presently a light air from the south-east enabled us to haul to the south-west, which course we kept for the night.

On heaving the lead every hour, our soundings were from twenty-five to thirty-three fathoms water, with a bottom of sand resembling quartz, mixed with broken shells and *madreporeæ*.

At daylight on the 12th we made sail, steering east, with a fresh breeze from the west north-west.

From six o'clock in the morning the mercury in the barometer had experienced a fall of more than three lines. Although the weather was very fine, this certain indication of a great loss in the equilibrium of the atmosphere merited the most serious attention. We nevertheless stood on before the wind into the middle of some islets lying about a myriameter from the coast, although we were very uncertain of finding a passage between those which we perceived a great way ahead. By ten o'clock we had run pretty far in among them, when we saw that they were linked

together by reefs. The weather had a threatening appearance; the horizon had just become overcast in the west south-west, and presently the wind blew from that quarter with the greatest impetuosity. We for a long time sought, between these shoals, some break that might allow us to gain the open sea, but without success; as we had no other outlet than the passage by which we had run in, we tacked, in order to stand towards it. The violence of the wind having forced us to take in the greater part of our sails, the ship made so much lee-way, that we fell very fast to leeward of this opening. Our running rigging, breaking fore and aft, our evolutions were consequently performed but very slowly: in vain we lay up several times for the opening; we were always obliged to run in again to the middle of the shoals, and thus continue plying to windward, in a space strewn with rocks, concealed under water at different depths, on which we every moment fully expected to see the ship strike: it required a very experienced eye to distinguish them in so extremely rough a sea. Citizen Raoul, a very intelligent young seaman, in whom the Admiral placed much confidence, had gone up to the main topmast head, and thence he directed the course of the ship. We several times saw ourselves driven quite close to shoals hidden by the waves, and he carried us clear of them

them all, although it was very difficult to perceive them, even at a short distance.

The *Espérance*, which did not hold so good a wind as the *Recherche*, was now quite close to the coast, having no other resource left than to run ashore, if she did not find a shelter where she might cast anchor. About one o'clock in the afternoon we perceived her at a great distance, in a place where it did not appear to us that there could possibly be any anchorage: she had just clued up all her sails; we were very uneasy respecting her situation, thinking that she had struck; but the position of her masts very soon dispelled our fears, by letting us know that she was come to an anchor: her distance, and the violence of the wind, prevented us from distinguishing the signals which she was making to us.

We did not hesitate to go and seek the same shelter: The Admiral immediately gave orders for bearing up north by east under the fore sail, and we presently ran to within a little distance of the *Espérance*; and found her, in a slight degree, protected from the sea by an islot. Signals were made from that ship to warn us to keep quite close along the land, in order to be better sheltered than she was. In coasting the little island, we beheld the frightful sight of a boisterous sea, which, having cleared the south point, opened in its fall a gulf that exposed to view part of the

base of this rock. The fear of approaching too near the land made us cast anchor, about five o'clock, to windward of the *Espérance*, but not sufficiently within the anchorage to avoid falling on board of her, if our ship dragged her anchors. The danger was the greater, as our first anchor came home: axes were now ready for cutting away the masts, in order to give less hold to the wind; but a second anchor brought us up*.

We had anchored in nineteen fathoms water, over a bottom of sand resembling quartz, mixed with broken shells.

Being violently tossed about by the sea, we were exposed to almost the whole impetuosity of the wind, and we were afraid of seeing our cables part, for we should in that case have fallen on some rocks, where the sea was breaking in a dreadful manner.

Towards night we let go a third anchor under foot, in order to be more certain of withstanding such violent efforts.

The mercury in the barometer, which had fallen to 27 inches $8\frac{1}{2}$ lines, perceptibly rose as

* Whatever may have been the merits of Admiral D'Entrecasteaux as a navigator, he and his officers cannot be complimented on their judgment as seamen, in thus running the risk of sacrificing both ships, by anchoring in the *Espérance*'s hawse. T.

soon as day appeared on the 11th, and announced to us that the storm was at an end.

The sea having fallen considerably, Captain Huon sent his boat on board of the *Recherche* to inform us, that, the day before, the *Espérance* had been carried so rapidly towards the land, that she was on the point of running ashore, when Citizen Legrand, an officer of distinguished merit, had in the height of the gale gone to the mast-head, and had come down again almost immediately, calling out with rapture, that the ship was clear of the danger. He described the situation of the anchorage which he had discovered, and affirmed that a vessel might ride there in safety. The salvation of the two ships depended on this discovery; for, had the *Recherche* been obliged to ply during the night in the midst of these dangerous shoals, after having struggled as long as she had been able against the violence of the gale, in hopes that a shift of wind would allow her to gain the open sea, she would infallibly have been lost.

This bay, which bears the name of Citizen Legrand, will recall to mind the signal service rendered to our expedition by this skilful seaman: his advice had been to anchor nearer the land, and it was unlucky that it had not been followed; for the chain which the *Espérance* had fast to her small bower anchor, had snapped

during the night, owing to the heavy sea, and the ship then riding only by a single anchor, had presently driven towards the coast, when fortunately another anchor brought her up. This ship also lost two iron tillers; she had no spare ones; these tillers were broken by the violent strokes which the sea gave the rudder, in the combined motions of pitching and rolling: *ceteris paribus*, pitching is much more felt at anchor than at sea.

From the place where we lay we counted twelve islets, with some rocks and breakers, which afforded us shelter. In this vast basin the sea might send us very heavy waves; but we were fortunately anchored on good holding ground.

The islet to leeward of which we were riding, bore from south 25° west to west 5° north.

In the morning a boat from each ship was sent thither to sound, as we had an intention of getting nearer to it; every where was found an excellent bottom, and there were seven fathoms and a half water at a small distance from the land.

Some persons, in order to reach the shore, were obliged to jump into the water, for the boat would have been knocked to pieces, had she been brought in close enough to the coast for them to land without wetting their feet.

Several seals, of the species which is called

phoca pusilla; were basking at their ease in the sun, on the rocks and along the shore; some suffered themselves to be killed with sticks. It is proper to remark, that the drawing which Buffon has given of this amphibious animal has doubtless been taken from a skin badly stuffed; it is there represented with a neck much smaller than the head, as is the property of most quadrupeds; but the seal being principally destined for swimming, is assimilated to fishes, and has the head of a smaller size than the neck.

In the same drawing the ears are represented very open, whereas they have nearly the form of a cone, without any other aperture than a longitudinal slit on the external side; it should seem that nature wished to prevent the water from introducing itself into the ears of this animal when it dives; for it can completely shut this slit when it is in the water, and open it, but in a slight degree, when it is on land.

Our boats also met with a numerous flock of swans, several of which suffered themselves to be caught with the hand; but the rest being apprized of the danger soon took to flight. This new species, which is a little smaller than the wild swan, is of a cinereous grey, the tint of which is somewhat brighter under the belly; the bill is blackish, and has at its base a protuberance of a

sulphur colour ; the feet are slightly tinged with red.

Our main top-sail having split a little the day before, when we tacked in struggling against the gale, we availed ourselves of the fine weather, in the course of the forenoon, to shift it.

A light breeze from the south-east had succeeded the storm. As the moment was favourable, we warped the ship, very early in the morning of the 12th, towards the shore, from which we were then at the distance of only about three hundred meters.

I went ashore on the little island that lay to the south-west ; it is hilly, and is not more than four kilometers long by two broad.

The swell had not yet sufficiently subsided to make it easy to land ; it was necessary to seize the moment of the rise of the sea to let our boat, which was riding by a grapnel, approach the shore, and at each time one of us leaped out on the beach. As the gunnel of the boat, on which it was necessary to stand in order to jump on shore, presented an inclined plane, and the coast was steep, we ran a risk of falling into the water, and of being rolled over by the waves, which followed very close upon each other, and from which a good swimmer even would have found much difficulty in extricating himself. This

was

was not the only danger we had to apprehend ; we might also become the prey of a large shark that kept a few yards astern of us. We had seen him from daybreak, prowling round our ships, and he had followed our boat as if he longed to have a snap at one of us. The chaplain of the Recherche fell into the water, and was on the point of being devoured by this animal, when fortunately the coxswain of the boat rescued him from the danger.

Some sailors, belonging to the Espérance, when walking on the rocks, killed, with their sticks, a great many seals of different colours ; there were some white, some of a more or less dark gray, and others brown, approaching a black ; however, they were all of the same species, designated by Buffon under the name of *petit phoque* ; their flesh was found very good to eat.

The islet on which we now were is composed of a beautiful granite, where quartz, felspar, and mica predominate ; this last is found in *laminæ* of a blackish colour ; I also remarked some *spiculae* of black schorl, but in a very small quantity ; this granite was exposed to full view, in several places. The mould, which had accumulated in the less steep spots, was covered with shrubs, so close to each other that I could not penetrate through them without much difficulty. I here gathered a beautiful species of *leptospermum*, remarkable

markable for its silvery leaves, and its flowers of a bright red.

I also saw several new species belonging to the family of the *thymelææ*, which have only two stamina, and of which Forster has made a new genus, under the denomination of *bankia*. Here I likewise remarked some new species of *rumex*, *lobelia*, and *buplevrum*.

The west part of this islet exhibits, in one of the most elevated points, a surface of calcareous stone, the strata of which follow the gentle declivity of the mountain. Strata of the same stone no doubt formerly covered the other parts of the island, and the *nucleus* of granite served as their base; but probably they have fallen in, and have uncovered the steep places; for to the north-east, where the mountains sink with a rather gentle slope, there are still to be found some calcareous stones at a small distance from the shore. I was never able to discover here any shells, notwithstanding the researches I made for that purpose.

From the summit of this little island we distinguished, at a distance, part of the reefs and rocks on which our ships had like to have been dashed to pieces, before we arrived at the anchorage. Their number still frightened us, and we wondered at having been able to escape from so many dangers.

Two gulls, a male and female, of the species called by Buffon *bourgmestre* (*larus fuscus*, Linn.), came and settled in these heights, at a short distance from us. The female having been shot, the male, terrified at the noise of the explosion, at first took to flight, but presently he returned to the same spot, being unwilling longer to abandon his mate, and he suffered himself to be killed by her side.

I had also fired with small shot at a seal that was lying down at a pretty good distance from me ; he felt himself wounded, and distrusting his strength, he durst not throw himself into the water : I was so well concealed, that he could not perceive me. Presently I saw another very big one, which, attracted by the cries of the wounded seal, came and licked all the places whence the blood was flowing ; this animal submitted to the operation as if it gave him some relief ; but at the sight of a boat which approached them, they both plunged into the sea.

Shortly after I distinguished some others, advancing towards the skirts of the beach ; they never failed, before they ventured to come on shore, to raise near half their body above the water, and they kept themselves some time in this attitude, smelling and looking about on all sides, to discover if there was no danger in their coming to rest on the rocks.

As I had the day before reaped an abundant harvest of specimens of natural history, of different kinds, I was obliged to spend part of the 13th on board, in order to describe and prepare them.

About five o'clock in the afternoon, a party was sent to pitch the tents for the observatory. I wished to avail myself of this opportunity to go on shore on the islet where I had already been. As the tide was only beginning to make, we could still land on it, but in a little time it would have been impossible to regain the boat, and we should have been obliged to pass the night on shore. This consideration prevented several of my companions from going thither. The space that was to be cleared to reach the beach was about seven meters, and at every wave the sea rose on it upwards of two meters in perpendicular height. It was necessary to pass in the interval between one wave and the next, at the risk of being swept away into the sea; this happened to the surgeon's first mate of the *Recherche*. He had just desired us to take notice that he was going to step on shore, almost without wetting his feet; but not crossing sufficiently quick, he was washed away by a heavy sea, which carried him along the coast: fortunately he could swim, and he came back towards the boat, but in a far different

ferent plight from what he had reckoned, when he wished to shew off his agility.

Those who had gone on shore were obliged to pass the night there; their whole stock of provisions consisted of a little biscuit. Dying with thirst, they were compelled, in a very dark night, to travel upwards of two kilometers across the rocks, in order to procure some water; and, to complete their misfortunes, it turned out to be brackish.

Enormous sharks, of the most common species, *squalus carcharias*, frequently made their appearance in the basin where we lay at anchor. On board of the *Espérance* one was caught, which was about four meters long, and much thicker in proportion to its length than sharks are in general.

As every thing made us foresee the impossibility of finding the means of renewing our stock of water at this anchorage, the second in command gave orders, that there should be served out no more than three fourths of a bottle a day to each person. The commander in chief and he had as much as they pleased. I thought, however, that water was a common stock, the privation of which should alike have extended to all.

On the 14th, at daybreak, the geographical engineer of the *Recherche* set off in the barge, in order to reconnoitre the islets of this little Archipelago,

pelago, and to see if there was no passage to the eastward, between the shoals; he was also to look out for a convenient watering-place. I ardently wished to be one on such an expedition; but as geographical operations are little connected with the researches of naturalists, we were not apprized of the hour of departure, for which every thing was arranged so privately, that I knew nothing of the matter, till the moment when the boat was rowing away from the ship.

The impossibility of having a boat to carry me to the main land determined me to go and spend this day on the islet to the south-west, the coast of which I followed, first proceeding to the north-west. It was not long before I reached one of the most lofty summits, where I found a little stream of fresh water, issuing from the clefts of a rock of granite; we were overjoyed at this discovery, for we had for some time been reduced to a very scanty allowance.

Hard by I perceived some cavities, filled with very clear water, which I had reason to think as fresh as that which was flowing from the rock, for it was upwards of two hundred meters perpendicular above the level of the sea. I was mistaken; it was very salt; and farther on, other excavations, filled with the same water, exhibited on their margins, crystals of marine salt, in rather thin *laminæ*, which at some distance resembled

fembled ice. This fact having been related on board, by some of the persons who accompanied me, several of our shipmates, in order to explain the cause of this phenomenon, insisted that the sea might very well rise to this height in bad weather, although the coast was guarded by rocks which were pretty large, but in truth at no great distance from the foot of the mountains.

As this stream, which was very dull, supplied us slowly with the water necessary for quenching our thirst, we were compelled to rest ourselves on its banks; and presently some small drops of salt water, by which we were wetted, apprized me that the air was raising as far as us the sea-water, attenuated by the dashing of the waves against the rocks. Our clothes were speedily covered with it, as if they had been exposed to a slight fog; this water had lost none of its saltiness.

Some birds were waiting for us to retire, in order to come and quench their thirst. I here killed a charming fawn-colour turtle, remarkable for six or eight golden feathers, which it has towards the base of the wings. For this reason White has called it the *golden-winged pigeon**:

* See page 146 of White's *Journal of a Voyage to New South Wales*, which contains a great variety of drawings and descriptions of specimens of the natural productions of that country. Published by Debrett in 1790. T.

he has given a good drawing of it. I had already found the same species at Cape Diemen.

We caught here a great many penguins, of the species called *aptenodyta minor*, which Captain Cook had also met with at New Zealand; these were likewise concealed in very deep holes in the rocks, from which it was often not a little difficult to get them out.

One of the most elevated spots which I this day visited, for the first time, was formed of calcareous stone, disposed in almost horizontal strata, like that which I had met with on the heights; it was of a very fine grain, exhibiting here and there only a few little cavities. But here too I did not remark any shells; I presume that it has been produced by a slow deposit of calcareous matter, conveyed in a state of solution.

The change of soil procured me a few plants, which I had not before found.

I here gathered a new and very remarkable species of *eucalyptus*, of which I shall give a description.

The tallest stems of this shrub are not above four meters high; they are smooth, and adorned principally towards the extremity of each branch with elongated, oval, alternate leaves, slightly bowed, and about a decimeter long.

The flowers, which are sessile, and commonly borne to the number of from about eight to ten,

at

at the extremity of a common peduncle about three centimeters long, present all the characters of the *eucalyptus* genus. Their numerous stamens have long filaments of a fawn colour; the style shoots out a little beyond the stamens.

The calyx, which is much elongated, is pushed out by the stamens, in proportion as they expand, and it falls when they have attained their full growth.

The capsule, which is open at the top, is trilocular, and sometimes quadrilocular; it is crowned by a small portion of the base of the style, which is divided into as many parts as there are cells.

Each cell contains a great many angulated seeds.

The form of the calyx has induced me to give to this shrub the name of *eucalyptus cornuta*.

Explanation of the Figures, Plate XX.

Fig. 1. Branch of the *eucalyptus cornuta*.

Fig. 2. Flower, with its calyx removed, in order to shew the stamens and the style.

Fig. 3. Flower, with its calyx detached, and still enveloping the stamens.

Fig. 4. Calyx.

Fig. 5. Germen.

Fig. 6. Capsule.

After having resolved to pass the night on shore, we looked for a convenient place, and we at length found a hollow in a rock, where we were for some time perfectly sheltered from the wind and the rain, which came on at the close of the day. The cold was sufficiently sharp to induce us to kindle a fire; besides, we had not much provision, and after I had selected from the birds I had shot those I wished to preserve for my collection, I gave my companions the others, which they broiled on the coals. We were expecting to make a tolerably good supper, and to sleep afterwards very quietly, when all on a sudden the wind shifted and became ingulfed in our cave, which we were forced to leave very quickly, that we might not be stifled by the smoke. This disappointment made us regret our not having returned on board, for the wind was so high as to extinguish our fire before our penguins were quite done, but still we found them very good.

An ample stock of water, which we had brought from the top of the mountain, afforded us, while making this meal, the agreeable reflection that here, at least, we might drink as much as we chose.

As soon as the day broke on the 15th, I proceeded towards the south-west. Among a great many other plants, I gathered at the foot of the mountains,

mountains, in a marly soil, a leguminous plant, which must be classed among those whose corolla is papilionaceous, and the filaments of the stamens separated from each other.

It forms a new genus, which I call *chorizema*.

The calyx is entire, and quadrifid on its margins. The upper division is broad, concave, and longer than the rest; the three inferior ones are straight, of equal size, and terminate in a point.

The superior margin of the standard is concave, and it almost entirely covers the wings and the keel.

The stamens, ten in number, are all separated from each other.

The germen is elliptic, and terminated by a recurved style.

The legume, which is of an oval form, is filled with a great number of black seeds, almost spherical.

This plant is perennial; its leaves are simple, alternate, sessile, coriaceous, long, dentated, and have two small prickles for their stipules.

The shape of the leaves has made me designate this species by the name of *chorizema ilicifolia*.

Explanation of the Figures, Plate XXI.

Fig. 1. Plant of the natural size.

Fig. 2. Flower.

Fig. 3. The petals expanded.

Fig. 4. Stamina, the corolla and the calyx having been removed.

Fig. 5. Germen.

Fig. 6. Legume.

Very early in the morning the *Spérance* had sent a boat to the main land to make some astronomical observations. Citizen Riche had also landed there. The rendezvous had been fixed for two o'clock in the afternoon at the place of debarkation; but his shipmates waited for him in vain till seven o'clock in the evening. The boat was then obliged to return on board, because she had no provisions in; and, besides, she was riding in a place which might have become very dangerous had the sea got up ever so little. The commanding officer left on the shore a written paper, to apprise Riche, that, in case he came to this place, the boat should return to fetch him the next morning at daylight, if the weather permitted.

The geographical engineer, sent to make a survey of this little Archipelago, reached his ship in the early part of the night; he had determined the position of upwards of twenty islets scattered in a space of about a degree both in longitude and in latitude. He landed on several points, without finding a convenient place for

watering ; the only stream of fresh water that he had met with would have scarcely sufficed for the daily consumption of our ships. He had discovered, behind the point of the main land that lay to the east north-east, a good anchorage, with not so great a depth of water as there was in that which we occupied.

At this Archipelago terminates the discouery of Nuyts. We were astonished at the precision with which its latitude had been settled by that navigator, at a period when astronomical instruments were yet very imperfect. I must make the same remark respecting every part of this country which was discovered by Leuwin.

For some days the winds blew from the northward of east in the morning, and from the south in the afternoon. The sands being strongly heated by the rays of the sun, occasion this diurnal variation. These sorts of winds kept the atmospheric air in equilibrio ; and indeed the mercury in the barometer commonly stood at 28 inches 3 or 4 lines.

On the 16th, the weather was very favourable, and a boat was sent in search of Citizen Riche. That naturalist, enraptured with the richness and novelty of the productions of this country, which, till now, had not been visited by any observer, had, no doubt, forgotten himself in the contemplation of their beauty, and very

soon lost his way; he had not yet come back to the place of debarkation.

On proceeding in the direction which he had been observed to take the day before, our people had a near view of some natives, with whom, however, it was not possible to have any intercourse; for they always fled as our people advanced towards them.

Riche's situation was the more alarming, as he had been absent near a day and a half, and we knew that he had bewildered himself without provisions in an extremely barren country.

The boat, which returned about two o'clock in the afternoon, brought the melancholy tidings that they had not been able to find him. Captain Huon immediately came to communicate the circumstance to the Admiral, who consulted with him respecting the measures that it would be proper to take on this disastrous occasion. The Admiral having sent for the naturalist Deschamps and myself, Captain Huon informed us of all the steps which he had hitherto taken for finding our unfortunate colleague: he reminded us of the dangers to which he might have exposed himself in advancing alone into the interior of the country, where perhaps he had fallen under the blows of the savages; in other respects, he could not, he said, but forebode the most fatal consequences, for he thought

it without the limits of possibility that he could have lost his way so long.

The nature of these burning sands, which are totally destitute of water, rendered still more frightful all the conjectures that we could make relative to his situation.

As our stock of water was already partly expended, and as we had not found the means of renewing it at this anchorage, Captain Huon, after having told us that it would be very disadvantageous to prolong our stay here, added, that it was evident that all farther researches could be only detrimental to the expedition, without affording the smallest hope of again finding our unfortunate associate.

Deschamps, on whose mind these arguments had all the influence that was desired, made no hesitation to give his opinion the first in favour of our departure, by siding with the Captain, and declaring that it could not be denied, that we had now nothing to do but to mourn the loss of our friend.

These probabilities had not the same effect on me; but I had seamen to persuade, and I employed the method which I judged the most proper to convince them, by quoting, in support of my opinion, an example taken from the voyages of the most celebrated of navigators. I reminded them that Captain Cook had two

failers who lost their way, in December 1777, on Christmas Island, the one for a whole day, and the other for eight and forty hours; that Cook had caused the latter to be looked for with the greatest care by several detachments *; that Christmas Island is, however, a very small low island, and scarcely covered with shrubs, while New Holland, where Citizen Riche had lost himself, was an immense country. I therefore requested that there might be employed, in search of our unfortunate friend, at least as much time as Captain Cook had spent in search of one of his sailors.

This reasoning produced all the effect that I wished.

A boat was immediately dispatched from each ship for the main land, and I had the satisfaction of being one of those who were to employ all their attention, and make every effort, to bring back our lost companion.

The Admiral directed guns to be fired every half hour, in order that, if Riche were still living, he might with greater certainty direct his steps towards the anchorage.

The wind favoured us, and we presently reached the shore.

After having advanced in different directions, we returned to the landing-place at night-fall.

* See Cook's Third Voyage, vol. ii. page 133. T.

We had travelled over a soil entirely covered with sands, where we had found vast spots absolutely destitute of verdure. I saw with surprise, on these distant shores, the grass known by the name of *spinifex squarrosum*, and I again admired the facility with which the plants that grow by the sea-side are spread to prodigious distances.

In these barren spots grew a beautiful plant, which has an affinity to the *irides*, and which is naturally classed next to the *dilatris* and *argolasia* genera; it forms, however, a new and very distinct genus, principally on account of its irregular corolla.

I designate it by the name of *anigozanthos*.

The flowers have no calyx.

The corolla presents the form of a tube, divided on its margins into six unequal parts, recurved inwardly; it is covered with reddish hairs.

The stamina, six in number, are attached underneath the divisions of the corolla, which is placed on the germen.

The style is simple, as well as the stigma.

The capsule is nearly spherical, and of the same colour as the flower by which it is surmounted; it is trilocular; the cells are filled with a great number of angulated seeds.

The

The top of the stem is covered with reddish hairs, like the flower.

I have called this species *anigozanthos rufa*.

Explanation of the Figures, Plate XXII.

Fig. 1. Plant.

Fig. 2. Flower.

Fig. 3. Flower cleft longitudinally and expanded, in order to shew the stamina,

Fig. 4. Stamina magnified.

Fig. 5. Capsule.

Although in the day the heat was very intense in this country, we nevertheless felt the cold pretty severely at night.

On the 17th, as soon as the day began to dawn, we divided ourselves into two parties; the one with which I was advanced towards the north, and the other went to the north-west.

We directed our route by the compass, and we had proceeded at least a myriameter across the plains of calcareous sand, which was seen heaped up in different directions, when we reached a rather confined bottom, where the verdure of the plants formed an agreeable contrast with the dismal aspect of the places that we had just traversed, and announced to us a very fertile vegetable earth. We here perceived a few cavities which afforded us a little fresh water,

water, but it was too far from the sea-side to be useful to our ships.

In continuing our progress, I remarked in the midst of these sands a few rocks of a calcareous nature, on which I gathered some fine plants that still withstood the aridity of the soil. Among the great number of those of the family of the *proteæ* which I observed, I shall mention two new species of *banksia*. I call the one *banksia repens*, and the other *banksia nivea*.

The former has a creeping stem, covered with a thick reddish down, terminated by flowers united under the form of a cone.

The leaves are pinnatifid, and when they are young they are covered with the same sort of down as the stem, so much so as to make this plant be taken for some species of *acrostichum*; but when more advanced in age they are very smooth.

Explanation of the Figures, Plate XXIII.

Fig. 1. Plant.

Fig. 2. Flower.

Fig. 3. Corolla cleft laterally, seen through a magnifier.

Fig. 4. Stamina magnified.

Fig. 5. Germen, with the style and the stigma.

The species of *banksia* that I call *nivea*, is remarkable on account of its long leaves, which

are white underneath, and very deeply denta-
ted.

Explanation of the Figures, Plate XXIV.

Fig. 1. Plant.

Fig. 2. Flower.

Fig. 3. Corolla expanded.

Fig. 4. Part of one of the divisions of the
corolla seen through a magnifier.

Fig. 5. Stamina magnified.

Fig. 6. Germen surmounted by its style.

I here again found the *eucalyptus cornuta*, and
a great many other plants of the family of the
myrti.

After four hours pretty hard walking, we ar-
rived on the banks of a large lake which com-
municates with the sea.

The natives had recently set fire to several
places through which we had just passed.

We saw no kangaroos; but their excrement,
which we perceived every where in great abun-
dance, let us know that these quadrupeds are very
numerous on this coast: we also remarked here
other excrements that exceedingly resembled
those of the cow, but we did not discover the
animal to which they belonged; on the sand
were seen the impressions of forked feet upwards
of three fourths of a decimeter broad. There is
no doubt that this country contains quadrupeds
much

much bigger than the kangaroo: it affords little food for birds; and, indeed, of these I found in this excursion only two species, a *muscicapa*, which I afterwards met with at the Moluccas; and the beautiful species of red-crested cockatoo, *psittacus Moluccensis*, which were seen here in flocks of several hundreds. When I endeavoured to approach them, they always set off at a great distance, and flew swiftly in sudden springs, at the same time setting up piercing and very disagreeable cries.

The banks of the lake, which we followed for some time in approaching the sea, are somewhat marshy; it extends very far inland, since the party that went to the north-west also reached its banks; some of them came to meet us, to inform us that they had remarked quite close to the lake, towards the part the farthest from the sea, impressions of shoes, which left no doubt that Riche had passed there; but the marks of naked feet, which appeared quite close to his, gave reason to apprehend that he had been carried away by the savages into the interior of the country. A circumstance which still more increased the probability of this conjecture was, that they soon found his pocket-handkerchief on the sands, and, a few yards farther on, one of his pistols. At a small distance was seen a little smoke of a deserted fire, and round it were found

some

some bits of paper on which they recognised Riche's hand writing. The sand too, in this spot, exhibited the impression of a person who had lain down.

We were all returning towards our boats, lamenting the fate of our unfortunate companion, when, being on the point of arriving at the landing-place, and having absolutely lost all hopes, we saw one of those who had remained to take care of the boats running to meet us, in order to tell us that Riche was still living, and that he had just come down to the water-side, exhausted by hunger and fatigue. He had been upwards of fifty-four hours on shore, and he had carried with him no other provisions than a few pieces of biscuit. The low state to which he was reduced did not permit his friends to suffer him to indulge his appetite, and it was only by trying gradually the digestive powers of his stomach that we gave him some food. His countenance, which was at first entirely distorted, brightened up by little and little. When he was recovered from the state of stupor into which he had been thrown by so long a privation of food, he related to us, that at no great distance from the fire which had been found still alight, there was a small stream of fresh water where he had quenched his thirst; that by dint of seeking among the plants, analogous to those whose fruits

fruits may serve for the sustenance of man, he found a shrub of the family of the *loti*, which furnished him with some little fruits, but in too small a quantity to satisfy his wants. On the first day that he bewildered himself he met with the spring near which his property had been found. He passed the night there, and spent the whole of the next day in looking for the place where our ships lay at anchor, without being able to discover it. During this laborious walk he found not a single drop of water; but chance fortunately conducted him again to this same spring, where he also passed the second night.

Having perceived some savages at a distance, he had endeavoured to speak to them, in order to learn what was their manner of living, and to ask them for some food, for he was cruelly tormented by hunger; but they had always taken to flight as he advanced towards them. In this climate men are not under the necessity of clothing themselves; and these were all entirely naked. They frequently set fire to the dry herbage that was scattered on the sands.

Some kangaroos, of the large species, and some cassowaries, were the only animals that Riche had discovered. Although in a state of dejection, he had till the last day carried about him a numerous collection of very interesting productions; but his strength diminished in so rapid a manner,

manner, in the course of the last four and twenty hours, that he had found a great deal of difficulty in crawling along the shore to look for our ships ; he had then been obliged to abandon the whole, even the most valuable specimens he had.

As soon as he had recovered from his faintness we carried him on board. It was to no purpose that we made all the signals agreed on, to announce that we had had the good fortune to find him again ; the people on board were so thoroughly persuaded beforehand of the inutility of our researches, that they did not understand us till the moment when our boat was quite close to the ship, and they perceived Riche in the middle of us. The horrible situation in which he would have been, had the opinion that had been formed respecting him prevailed, ought to inspire the greatest dread, and be an awful lesson to those captains and naturalists who undertake a distant voyage ; for if we had quitted this anchorage the day before, he would have terminated his life by the most frightful death, and in all the agonies of the most horrid despair.

Although it was thus demonstrated by this fact that it was possible for a person to lose himself for two days in this country, most of our officers would not however admit the fact ; some of them chose to think and to say, that Riche had had an intention of bewildering himself ; as if it were

were to be presumed that he had gone of his own accord, and exposed himself to all the horrors of cruel hunger.

During the whole time that we remained at this anchorage, we could not haul the seine; but on board the ships we caught with hook and line a few fishes, among which were the *labrus cyprioides*, and several new species of the *perca* genus.

Our anchoring-place was in latitude $33^{\circ} 55'$ south, and longitude $119^{\circ} 32'$ east.

The variation of the compass was found to be 6° west.

In the evening all the boats were hoisted in, and we waited till next day to weigh anchor, if the wind should permit. It varied from east north-east to east south-east, and by six o'clock in the morning of the 18th we were under sail.

We passed to the northward of the little island which had served us as a shelter, and we stood out into the open sea.

At noon, being in latitude $34^{\circ} 12' 54''$ south, and longitude $119^{\circ} 21'$ east, the southernmost rocks bore east 2° south, distant about two thirds of a myriameter; and the land the farthest to the northward north 1° east.

For some days the easterly winds prevailed, and made us apprehend great difficulties in the examination of this coast. Analogy also

gave no small degree of probability to this conjecture. In fact, at the Cape of Good Hope, which extends even a few degrees more to the southward than this part of New Holland, the easterly winds are always the reigning winds at this season of the year.

On the 23d at noon we had got no farther than the latitude of $34^{\circ} 24'$ south, and longitude of $120^{\circ} 22'$ east; and we had not yet lost sight of the little Archipelago where we had anchored.

The wind had been pretty fresh at east in the afternoon, but in the beginning of the night it blew from the coast, and made us experience intolerable heat. Presently we were surrounded by an extraordinarily thick mist; the air was charged with very great humidity, which penetrated every where: I cannot form a better comparison of it than with that which is brought by the south winds in the Mediterranean, at a short distance from the coast of Africa, in the hottest season. The sands, heated by the rays of the sun, had increased the property possessed by the atmospheric air of dissolving water, and we found ourselves as if in the middle of a vapour-bath of a mild temperature.

The darkness of the night made us lose sight of the *Espérance* about eleven o'clock at night, and she did not, till three hours after, answer our signals by a gun which we heard from a great

great distance. The wind was faint: we worked to windward, and as soon as the day broke on the 24th, we discovered that ship not far from us; the wind shortly began to blow strong from the south-west, and for some time carried us fast through the water, on an easterly course.

At noon we were in latitude $34^{\circ} 14'$ south, and longitude $121^{\circ} 2'$ east; and two hours after, we discovered behind some islots, a large bight, which appeared to us to afford an excellent shelter.

We were apprized of the presence of some natives, by fires, the smoke of which we saw rising pretty far from the shore, from several points very distant from each other.

The barometer having fallen still lower than when the gale forced us to anchor in Legrand's Bay, we stood out to the offing, in order that we might not be hemmed in on this dangerous coast; we then brought to, and remained the whole night with our head to the south south-east and south.

The sea was very high: the wind blew with violence from the south-west to the west south-west; after having gradually increased, it raged with the greatest impetuosity during almost the whole night, and raised the waves to a prodigious height; we had not yet been so violently tossed about by a storm.

The south-west winds in these seas are almost always boisterous, and add considerably to the dangers to which a navigator is exposed in ranging along, from the westward to the eastward, this low coast, often guarded by shoals, which it is to be feared he might not discover in time to be able to avoid them.

At daybreak on the 25th we stood in for the land. The wind had become fixed at west south-west, and had brought back fine weather.

Towards the middle of the day we were in latitude $33^{\circ} 42'$ south, and longitude $122^{\circ} 4'$ east, when from the mast-head we discerned beyond several islets part of the coast, which still appeared very low, extending from west to north-west; presently we saw it form a dike, raised in a tolerably uniform manner, which took a direction to the eastward, and behind which we did not perceive any land.

On the approach of night we hauled off from it, and afterwards hove to. The next day, the 26th, we continued to follow the coast, and about three o'clock in the afternoon we were distant from it only two kilometers: it had constantly presented to us the same appearance for an extent of upwards of three myriameters. We perfectly distinguished on it the thin, horizontal strata, which exhibited exactly the same forms

as the calcareous stone that I had met with at Legrand's Bay.

I am inclined to think that this break in the mountains, for so great an extent, is the work of the waters; for they have undermined these lands at their base, and the upper part must have sunk by falling into the sea, and forming the rampart which renders this coast inaccessible. We remarked a few small spots where the earth had fallen down, but by which it would nevertheless have been very difficult to ascend; we had drawn so close in with it, that it was necessary to gain an offing; the depth of water was then twenty fathoms, over a bottom of calcareous sand.

Very early in the morning of the 27th we saw the coast extending to the north-east; and with the wind at south-west, we had no difficulty in following its windings. We still perceived the same steep rampart, which, rising with tolerable uniformity to the height of about ninety meters, exhibited from its upper part to the level of the sea, the parallel strata of which it is composed.

Towards the middle of the day the coast changed its aspect, trending a little to the south-east; it then appeared intersected by small hills, covered with sand, which, sinking with a gentle declivity, terminated in a very low beach. The sea now assumed a greenish tint, even in the

offing, and indicated to us a change of bottom; but a line of fourteen fathoms could not reach the ground.

The breeze soon freshened, and began to blow very strong. Our experience had taught us to fear on this coast the south-west winds, which were become almost always boisterous: for this reason we hauled off south-east by east, to gain an offing.

The want of water was severely felt on board our two ships, and if we could not find an immediate opportunity of supplying ourselves with that article, we must in a little time be under the necessity of leaving the coast: but had we begun at its easternmost part, in order to range along it from east to west, we should have had the advantage of taking in a good stock of water at Cape Diemen; instead of which, our water was already half expended when we began the survey of this land by its westernmost point. This consideration and many others ought to induce the navigator to follow it from east to west; besides, the impetuosity of the south-west winds exposes vessels to the greatest dangers, while the easterly winds, which are the most constant, never blow with violence.

On the 28th we were only two kilometers from the coast, and the lead gave us sometimes a bottom of coarse sand, and, at others, of rock; the

the depth of water varying from nine to fourteen fathoms.

At noon, when our latitude was $32^{\circ} 19'$ south, and our longitude $124^{\circ} 52'$ east, the nearest coast was two thirds of a kilometer to the north north-west of us; its extremes bore from north 69° west to east 20° north: shortly it presented itself under the form of a rampart, like that which we had before coasted; but it differed from the former, by its upper part rising with a gentle acclivity into the interior of the country. I there remarked a few shrubs, which seemed to be in a more thriving state than those we had hitherto perceived along this coast.

The sea was covered with a species of seaweed called *fucus natans*.

Being baffled by the easterly winds, we were still on the 31st, towards the middle of the day, only in latitude $32^{\circ} 8'$ south, and longitude $126^{\circ} 42'$ east, when we saw rising a fog, which represented to us on every side a table land. The illusion was so striking, that the persons who came up from below, thought we had just entered a vast basin. We were, however, two myriameters from the coast, which this fog did not permit us to distinguish.

In the evening, the sky darkened towards the land, and lightning flashed from the thickest clouds; then the fog which encompassed the

horizon dispersed; the wind shifted to the westward, and blew very fresh.

In the afternoon of the 3d of January 1793, Captain Huon communicated to Admiral D'Entrecasteaux the damage which the *Espérance*'s rudder had sustained. He informed him, that his ship's company had long been reduced to a pint and a half of water a day each man, that he had been obliged to put a stop to the distribution of antiscorbutic drinks, &c. and that thirty casks of water then formed the whole stock remaining on board of the *Espérance*.

The next morning, the 4th, about half past ten o'clock, the Admiral sent him a letter, to acquaint him with the resolution that he had taken respecting the situation of the two ships.

At noon we were in latitude $31^{\circ} 52'$ south, and longitude $129^{\circ} 10'$ east, and we saw the land from east to north by west, being a myriameter from the nearest shore.

As soon as the boat was hoisted in, we made sail close hauled on the larboard tack, with the wind at east south east, and stood on towards Cape Diemen, thus taking our leave of an extremely barren coast, upwards of a hundred and sixty myriameters of which we had just ranged along, generally in a direction from west by south to east by north. Fifteen months before us, Vancouver, alike thwarted by easterly winds, had

had been forced to abandon it, after he had been able to examine it only for the extent of about seventy myriameters *.

Before we touched on this coast, we did not foresee that we should here so frequently meet with tempestuous winds, especially at this season, which should be that of the summer in these seas, the sun having been now for upwards of two months in the southern hemisphere. May not this impetuosity of the winds be occasioned by the prodigious difference that exists between the trifling degree of the heat of the atmosphere at sea, and the ardent rays of the sun, which were concentrated by the burning sands of the mainland?

The currents that were perceptible along this coast, always followed the direction of the winds.

The *Espérance* was in still greater distress than we were ; besides, that ship had met with several accidents at our last anchorage : it required an excellent shelter to execute all the repairs of which she stood in need.

At four o'clock we lost sight of the land from the mast head, and, at the same moment, we had thirty fathoms water, with a bottom of fine sand, mixed with broken shells and *lytophites*. We continued sounding every two hours, and, at

* See Vancouver's Voyage, vol. i., page 42 and following.
each

each cast of the lead, we found that the depth of water increased from two fathoms to two and a half: it had constantly augmented in an almost imperceptible manner, in proportion as we receded from the coast, which, on the 5th, at five o'clock in the afternoon, was at the distance of twenty myriameters; then we got soundings in sixty-one fathoms and a half, over a bottom of pretty fine sand mixed with gravel, and from that time we could not strike ground, although we sounded repeatedly. This slow increase of the depth of the sea near this coast, shewing that the lands under water sink by a gentle declivity, made me presume that those which advance into the interior of the island rise by an acclivity also very gentle, so that its high mountains are too far distant to be perceived from the shore.

The day before we had been carried twenty-three miles to the westward of our reckoning, and, in the course of the 7th, twenty miles in the same direction. At noon we were in latitude $35^{\circ} 30'$ south. The rapidity with which these currents set to the westward, depends, perhaps, on some channel which separates the lands of New Holland from those of Cape Diemen, between Point Hicks and Furneaux's Islands. Captain Cook, when he explored the east part of New Holland, saw no land in this space, the extent of which is about twenty myriameters, and thought

thought that he was at the entrance of a great gulf. Perhaps in that part of the coast begins the opening of a channel, which, after having formed different sinuosities, runs to the westward, and there forms another opening in the same latitude as that in which we experienced such strong currents*.

We did not meet with westerly winds till we reached the latitude of 40° south; they carried us to Cape Diemen, varying from south-west to north-west.

About ten o'clock we saw passing at a small distance from us a great number of cetaceous fishes of a new species, which appeared to me to be of the *delphinus* genus. They may be easily distinguished by a large black spot which they have on the back behind the dorsal fin; the upper part of the body is of a blackish brown, and the belly white. The largest were upwards of three meters in length: they were preceded by a shoal of dolphins (*delphinus delphis*), and were, like

* This observation affords a striking proof of the justness of M. Labillardière's discernment; for it has recently been ascertained that the part of New Holland known by the name of Van Diemen's Land is, in fact, a detached island; an English vessel having entered the eastern mouth of this newly-discovered Strait between the 38th and 39th degrees of south latitude, and returned round the South Cape to Port Jackson. T.

them, swimming in a body, executing with great rapidity nearly the same movements.

We continued lying to during the night, intending the next day to make the land a degree to the northward of the latitude of Cape Diermen. We were in hopes to discover there a harbour, that might in future afford great advantages to navigators who intended to explore the south-west of New Holland, by taking advantage of the easterly winds.

At four o'clock in the morning of the 19th we saw the land extending from north-east by north to east by south, the nearest coast bearing east north-east, at the distance of three myriameters.

The wind was at south-west; we stood on for some time close hauled on the starboard tack. Two hours after, when we were only a myriameter and a half from the shore, we had fifty fathoms water over a bottom of very coarse sand and broken shells.

We beheld a steep coast, and at a little distance a chain of mountains of moderate elevation, which followed nearly the same direction: this land was almost every where covered with large trees.

At noon we were in latitude $42^{\circ} 51'$ south, and longitude $142^{\circ} 49'$ east; the lands to the north-east shewed themselves only through a thick mist, with

with which the horizon was very much darkened on all sides.

The variation of the compass had increased very rapidly since it had become easterly, for, on the 20th, it was observed to be 7° east.

The coast presented no bight that could make us presume that we should there meet with a good anchorage. At noon we had already reached the latitude of $43^{\circ} 22'$ south, and longitude of $143^{\circ} 28'$ east; we were only a myriameter from the land, and from north half west to east south-east it offered to our view some rather lofty mountains.

At six o'clock in the afternoon we doubled the South Cape, at the distance of two myriameters. It is remarkable that in all the different sinuosities of the coast which we had just followed, we had constantly had the wind right aft. It seems to me that the high mountains, opposing a barrier to the winds, force them to keep along the coast.

We discovered, above all the other mountains, that which we had seen covered with snow, the preceding year, at the period of our anchoring in Port D'Entrecasteaux; but as we were now in the season of the greatest heats, we no longer perceived any snow but in the large excavations, where it was sheltered from the rays of the sun during a great part of the day: this mountain is remark-

able

able for a small peak in the shape of a cone, which terminates its summit.

On the approach of night we passed pretty close to the Mewstone, and shortly after we brought to, having a fresh breeze at west.

We sounded several times, with a line of eighty three fathoms, without getting bottom.

As we were hemmed in on the coast, by the wind shifting to the south south-west, we were forced to ply to windward.

At noon we had observed, in latitude $43^{\circ} 44'$ south, our longitude being $144^{\circ} 16'$ east, when we set the Mewstone, bearing west $16^{\circ} 30'$ south, and the Eddystone south south-east 1° east. The nearest coast then bore north north-west, distant three kilometers.

Very early in the morning of the 22d, we were at the entrance of Storm Bay. The wind was at south south-east, and prevented us from entering D'Entrecasteaux's Strait, where we had an intention of going to anchor, in a cove which we had surveyed the year before, and which was extremely convenient for giving our ships all the repairs of which they stood in need; but we were obliged to enter a bay, which some rocks almost even with the water's edge, situated near its middle, determined us to call *La Baie des Roches*, Rocky Bay; this is the first cove that is met with on the larboard hand on entering Storm Bay,

Bay, and its direction is from north-east to south-west. The *Esperance* anchored there at a very early hour.

Having run a third of the way up into this bay, we got bottom, at two fathoms and a half; it was not prudent to proceed farther without sounding the track that we were to follow, and this was the more easy as we had several boats in the water. Crétin, who had been sent to take the soundings of this cove the preceding year, told the Admiral that we should not find less than two fathoms and a half; which precluded all farther examination. However, this assertion ought not to have been fully credited, for, independently of Crétin not having, when he had sounded, employed sufficient time to answer within a quarter of a fathom for the depth of water, it was doubtful whether he had not performed this service at low water, which might occasion a difference of at least three quarters of a fathom, and cause us to touch. Notwithstanding these considerations, the Admiral made no hesitation in steering to port, thus approaching still nearer the low lands; accordingly we soon ran aground, but fortunately it was on sand. This happened at half past nine o'clock. The wind came down in heavy squalls from the top of the mountains, and drove us with violence towards the coast, working us deeper and deeper into the sand.

The

The *Esperance* immediately sent us her launch and her barge, which, added to our own boats, endeavoured in vain to tow our ship's head round to starboard. We then felt the necessity of carrying out a stream anchor to the west north-west, in order to steady our ship by a good hawser, that might prevent her from being driven nearer the coast ; then, to lighten her, we started in the hold all the salt water with which most of our empty casks had been filled, and, to free the ship of it, we at the same time set all the pumps to work. As soon as we were lightened of this weight, we hove at the capstern on a bower anchor, which had been dropped quite close to the former ; but it was not till about one o'clock that we were able to get off this sand-bank, and after we had made the greatest efforts, our ship was at length brought afloat.

END OF THE FIRST VOLUME.





